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ANNUAL MEDICAL & SANITARY REPORT

FOR THE YEAR 1959

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SWAZILAND

ANNUAL MEDICAL AND SANITARY REPORT.
1959

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GENERAL REVIEW.

Swaziland has an area of 6,704 square miles and is bordered on the north, west and south by the Transvaal, and on the east by Mozambique and Zululand.

The Territory is geographically divided into four well-defined regions, running from north to south, namely the mountainous highveld in the west with an altitude of 3,500 feet to 5,000 feet; the middleveld with an average altitude of 2,000 feet; the lowveld or bushveld with an altitude of 700 feet to 300 feet, and the Lebombo Plateau on the east, with an altitude of 2,000 feet. Scenically the Territory is one of the most attractive parts of Africa. The highveld has a temperate climate and frosts occur during the winter. The climate of the middleveld is subtropical and that of the bushveld almost tropical.

Rainfall, which occurs chiefly in the summer, varies between approximately 60" a year in the highveld and approximately 30" a year in the lowveld. Drizzle and mists are frequent in the highveld areas. The country is well-watered by numerous perennial streams and rivers, some of which are of a considerable size, and now provide water for three large irrigation schemes which have been established at Mananga in the north-east and Big Bend in the east (at both of which sugar and rice are grown) and at Malkerns in the centre of Swaziland (which produces rice, subtropical fruit and citrus).

In addition to the irrigation schemes, other important agricultural activities are cattle ranching in the bushveld, subtropical fruit and rice production in the middleveld, in the southern portion of which a considerable amount of tobacco is also grown, and afforestation and sheep farming in the highveld. Significant mining development is at present restricted to the production of asbestos at Havelock Mine in the north west and of a small amount of high-grade coal in the bushveld. Iron ore and additional coal deposits are under investigation.

A census held in 1956 gave the total population of Swaziland as 237,041, of which 5,919 were Europeans and 1,378 Eurafricans.

The Swazi are predominantly peasant farmers and livestock owners, and live in "Native Areas", 35 in number, which are scattered throughout the Territory and intersected by European owned land.

Their dwellings for the most part consist of wattle-and-daub structures, or bee-hive huts, and small family collections of these huts are widely dispersed. Other than in the neighbourhood of the European towns, there are no villages.

Whilst the agricultural activities of the Swazi are still, in the main, concentrated on the raising of cattle and goats and the cultivation of maize, the work of the Land Utilization Department is now producing results, and both the standard and scope of Swazi farming are improving year by year.

The medical needs of the Territory are met by Government

/Hospitals .....

hospitals at Mbabane (151 beds), Hlatikulu (135 beds), Mankaiana (24 beds) and Pigg's Peak (16 beds); by Mission Hospitals at Bremersdorp (177 beds), Mahamba (73 beds) and Stegi (35 beds); by 10 Government clinics (three of which are maintained by the Swazi National Treasury) and 11 Mission clinics in outlying areas; by the mine hospital at Havelock Mine. ; and by medical practitioners, either working on their own or employed by large industrial concerns, who are stationed at Mbabane, Bremersdorp, Pigg's Peak, Stegi Malkerns, Mananga, Big Bend, Mliba in the Manzini District and at Sicunusa, in the Mankaiana district.

There are, in fact, 28 medical practitioners working in Swaziland at present, four of these who hold foreign unregistrable qualifications being licensed to practice, under the relevant section of the Medical, Dental and Pharmacy Proclamation. There is thus 1 doctor per 8,466 persons, in Swaziland, in comparision with the accepted Western European standard of 1 doctor for 1,000 patients and the "South of the Sahara" average of 1 doctor per 10,000 patients. The 611 hospital beds in use in Swaziland to-day give a ratio of 2.6 beds per 1,000 persons, as against the Western European average of 4 - 5 beds per 1,000.

The Mbuluzi Leper Hospital situated 20 miles from Mbabane and run by the Nazarene Mission, with the assistance of a Government grant, copes most adequately with the decreasing number of lepers in the Territory.

There is no special tuberculosis hospital, but four general hospitals have separate tuberculosis wards. There is also no mental hospital, and dangerous and violent lunatics are detained and treated in sections of the gaols.

The British Red Cross Society is now running Infant Welare Clinics at Mbabane, Hlatikulu, Stegi and Pigg's Peak, at which most useful work is being done.

The Public Health services of the Territory are centred at the Health Office, Bremersdorp, under the control of the Medical Officer of Health, in whose charge are also the small clinical laboratory, the malaria control unit and the bilharzia investigational unit.

The recently formed independent Medical Association of Swaziland, whose members include private practitioners, medical missionaries and Government medical officers, hold quarterly meetings, which are usually well supported and which make up to some extent for the lack of professional contact so common in territories such as Swaziland.

Details of the staff at the various Government hospitals and at the Health Office will be found in Appendix I, page 21.

In spite of a revision of salaries, considerable difficulty is still being experienced in recruiting Medical Officers, although it has been possible to maintain the establishment with locum tenens appointments. Difficulty has also been experienced with Nursing Sisters, chiefly this year through "marriage-wastage", and the post of Laboratory Technician at the Health Office at Bremersdorp has been vacant for months. On the other hand, the number of applications for employment by African nurses, chiefly from outside the Territory, has far exceeded the demand.

The training of nurses in Swaziland is carried out

at the Ainsworth Dickson Training College attached to the Raleigh Fitkin Memorial Hospital. Two courses of nursing are carried out, the lower standard Swaziland Executive Nursing Committee course and the High Commission Territories Nursing Council course, which is considered to be on a par with the South African Nursing Council course. It is hoped that when sufficient numbers of girls of the educational standard required for the High Commission Territories Nursing Council come forward, the Swaziland Executive Nursing Committee course will fall away.

The Ainsworth Dickson Training College can train sufficient nurses for the needs of Swaziland.

Dispensers and Laboratory Assistants are trained at Government Hospitals as required, whilst the Medical Assistants on the staff of the Medical Department received their training in Nyasaland.

Since the successful malaria control programme has resulted in the near-eradication of the disease from Swaziland, tuberculosis is now the main health problem, and it is hoped to start a control programme with the assistance of World Health Organisation shortly. Bilharzia is widespread among the indigenous population, and whilst the clinical manifestations are usually minimal, it is felt that a potentially very dangerous position exists at the irrigation schemes, and a careful watch is being kept on conditions here. Malnutrition and infantile diarrhoea are important causes of ill-health and death amongst young children, the former being especially noticeable at the post-weaning age, and the heart disease and pnuemonias also rank high as causes of death.

The conditions which cause most attendances at Government hospitals are acute upper respiratory tract infections, diseases of the genito-urinary system, minor disorders of the digestive system, venereal diseases, rheumatism, and infections of the skins and subcutaneous tissues. Among the infectious diseases, enteric fever was responsible for twice as many cases as usual in 1959, whilst numerous cases of measles and whooping cough occurred throughout the year, as usual.

Public Health duties are carried out by a Health Inspector and the Medical Officer of Health, but coverage at present can only be sketchy, as it is considered essential that the two other Health Inspectors devote their full time to malaria and bilharzia under the guidance of the Medical Officer of Health.

The second ambulance to be donated to the Department by the Deferred Pay Interest Fund (Chamber of Mines, Johannesburg), was put into service at Hlatikulu Hospital in 1959; the first having been allocated to Mbabane Hospital in 1958. These greatly appreciated gifts are long wheel-base Landrovers, converted into ambulances, a type of vehicle which has already proved itself in this department.

During the year under review Dr. K. Martin, World Health Organisation, Nairobi, visited Swaziland again in March, to discuss W.H.O projects. He was accompanied by Mr. P. Hanson, U.N.I.C.E.F., Kampala, and it is hoped that a scheme for supplementing the diet of malnourished children with dried skimmed milk will result from this visit.

Later in March, Mr. W.F. Vetter, World Health Organisation Consultant in Hospital Construction arrived, saw various medical institutions in the Territory and advised on the proposed extensions to Mbabane Hospital.

It was a great pleasure to welcome Professor H. W. Rodgers, O.B.E., F.R.C.S, Head of the Department of Surgery, Belfast University in September. During a heavy week, Professor Rodgers saw most of the Swaziland hospitals, opperated at several, and addressed a well-attended meeting of the Medical Association of Swaziland. His visit was much appreciated.

In November, Mr. L. Orihuela, World Health Organisation Sanitation Adviser visited the department and his advice was both useful and stimulating, whilst in December the W.H.O. Malaria Assessment Team, which had been working in Zululand, made a rapid visit to Swaziland.

/Chapter ...

CHAPTER I - PUBLIC HEALTH.

(i) COMMUNICABLE DISEASES.

(a) Malaria:

In discussing malaria in this and future annual reports, the last completed transmission season will be reviewed (and in this case it will be the transmission season lasting from September 1958 to May 1959), as it is obviously most unsatisfactory to report this disease on a calendar year basis, by combining the second half of one transmission season with the first half of the next.

The malaria position has remained very satisfactory. During the 1958-59 transmission season control measures were restricted to the irrigation schemes and large farming estates in the eastern lowveld areas, where there is a considerable turn-over of labour, much of which comes from Mozambique, where malaria control measures have unfortunately not yet been instituted. The rest of the previously malarious area was covered by surveillance teams, whose duties consisted of the taking of blood slides from children, from all cases of febrile illness encountered, and from all immigrants found, and the "dosing" of the latter with chloroquin and daraprim; the submission of mosquito larvae for identification; the test-spraying of huts for the presence of mosquitos; assistance with night-catches of mosquitos; and the follow-up and dosing of all cases giving positive slides. During the season 15,682 blood slides were examined, which is more than twice the number examined in previous years, and of these 165 were positive for malaria parasites, but 135 of these "positives" were immigrants from Mozambique. During the same period, 12,785 huts were test-sprayed, and only 65 Anopheles gambiae mosquitos were found in the huts, and 40 of these were from an isolated group of 8 huts near the Mozambique border which had escaped previous control measures. Night catches confirmed the previous findings that the Anopheles gambiae mosquito in Swaziland is now chiefly exophilic and zoophilic. In 16 night-catches, 5 Anopheles gambiae were caught biting man outside (and this at two "catches" where there were no cattle in the neighbourhood), whereas 108 Anopheles gambiae were caught biting cattle and 144 were caught resting in cattle kraals. No Anopheles gambiae were caught in huts. A W.H.O. Malaria Assessment Team paid a short visit to Swaziland in December. Their report is awaited.

The report of the activities of the Malaria Control Unit will be fonnd in Appendix II, page 23 , where some details of the first half of the transmission season how being reported which were recorded in the 1958 Annual Medical and Sanitary Report are omitted.

(b) Tuberculosis.

Discussions on the proposed World Health Organisation-sponsored Tuberculosis Control Scheme for Swaziland, have continued, especially on the Colonial Office objection to the scheme as originally put forward by W.H.O. This objection was based on the danger of resistant strains of tubercle bacilli likely to develop on the recommended therapeutic regime of using I.N.A.H on its own. W.H.O have now agreed that P.A.S. + I.N.A.H may be used in the scheme, in the treatment of all active cases found, provided the cost of the P.A.S. is borne by Swaziland and not by W.H.O., and the Colonial Office have as a result withdrawn their objection.

It is hoped that it will now be possible to get the

scheme in operation shortly.

During 1959 further beds were installed in the four existing tuberculosis wards attached to general hospitals, and there are now 93 beds available for tuberculosis in the Territory. These beds have again been constantly occupied, usually by advanced cases requiring prolonged hospitalisation. The number of early cases reporting for treatment is still too small.

In-patient treatment is followed with out-patient treatment, but this is seldom successful unless the patient resides near a hospital or clinic.

The number of cases of tuberculosis dealt with at Government and Mission Hospitals during the year was much the same as in 1958 - 1015 cases as against 983. Of this total 639 were treated as in-patients and 376 as out-patients. The number of cases of pulmonary tuberculosis was 700, which shows little change from the 688 cases reported the previous year.

(c) Bilharzia.

Work on this disease was again confined to surveys, no major control measures being instituted on account of the comparative ineffectiveness of present control measures in conditions such as exist in Swaziland.

Investigations into the incidence of the disease in the various age groups and of the snail population were carried out throughout the year and the whole Territory, except a small area in the south-west, has now been fairly well covered.

The results of these surveys and of other work done on bilharzia will be found in Appendix III, at page 30. The position revealed is very much as expected, namely that in most areas of the middleveld and bushveld there is an incidence of between 20% and 40% of urinary bilharzia, with little intestinal bilharzia, except in the north-east of the Territory, where the incidence of the latter may go up to 40%, and consequently, as previously stated, all rivers, streams and dams in the middleveld and bushveld must be considered as possible sources of bilharzial infection.

However, a striking result was obtained in the survey at Sipofaneni, in the bushveld, where an incidence of 30% infection with urinary bilharzia might have been expected. The survey, in fact, revealed no urinary bilharzia, and this is thought to be connected with the fact that the people surveyed use the hot springs in the neighbourhood for bathing, and the fast-flowing Usutu River for the washing of clothes.

The number of cases of bilharzia seen at Government and Mission hospitals during the year was considerably higher than in the previous year, namely 739 (734 of the urinary type and 5 of the intestinal type), as against 543 in 1958. Again the great majority of cases were small boys complaining of haematuria and few of the late and serious effects of the disease were seen. The significance of this rise in the number of cases reporting for treatment is not clear, but there has been a considerable variation in the number of c ases reported year by year over the past 10 years, the range being 719 to 298.

As in 1958, when microscopic examinations of stool specimens were carried out during surveys, a record was also

kept of other ova found, and these results, with the 1958 results for comparison, were as follows:-

Percentage of Specimens containing Ova other than those of Sh. Mansoni.

Year	1958	1959
No. of specimens examined	567	2633
Ova of Ascaris lumbricoides	13.1%	11.9%
" " Taenia saginata	9.4%	5.6%
" " Trichuris trichuria	8.6%	3.9%
" " Strongyloides spp.	2.4%	1.6%
" " Entrobius vermicularis	1.6%	0.2%
" " Ancylostoma duodenale	0.5%)	
" " Fasciola hepatica	0.4%)	see
" " Hymenolepis nana	0.2%)	below

Ancylostoma duodenale was noted in one survey only - in 2% of the specimens, at Ubombo Ranches. H. nana was noted in two surveys and Fasciola hepatica in one survey.

(d) Influenza.

Although no definite epidemic of influenza occurred during 1959, the number of cases reported was again high, viz. 3579 as against 3807 in 1958, and 3390 cases in 1957, the year of the epidemic of "Asian Influenza". Previous to 1957, the recorded total had not exceeded 2,000.

As before cases were reported throughout the year, with the usual seasonal increase in the late winter and early spring. The great majority of cases were again mild and no deaths were reported.

The increase in the number of cases of influenza seen since the Asian Influenza epidemic is interesting, and is probably due to the continued presence of the Asian Influenza virus. That this increase is real and not due to the term "influenza" being used as an omnibus diagnosis for all mild upper respiratory tract infections is shown by the totalled figures, over the past 10 years, for the following conditions - acute bronchitis, influenza, coryza, "acute upper respiratory tract infections", which are as follows:-

1950	2913
1951	3078
1952	3928
1953	4481
1954	4464
1955	3500
1956	5213
1957	9327
1958	12750
1959	12557

(e) Leprosy.

The number of patients at the Mbuluzi Leprosy Colony at the end of the year was 30, a drop of 10 on last year's figure. There were during the year 17 admissions and 4 re-admissions (two of these being old "burnt-out" cases), and there were 28 discharges,2 desertions and 1 death. The

/position ......

position thus continues to improve and while the disease can no longer be said to be a serious health problem, the well-run Leprosy Colony continues to play a valuable part in the health services of the Territory. The full report on the colony by the Medical Superintendent of the Raleigh Fitkin Memorial Hospital, will be found at Appendix II page 23.

(f) SmallPox.

Smallpox has not been reported in Swaziland for 10 years, and during the past 6 years, 177,427 vaccinations have been carried out. During 1959, no vaccination campaign was attempted, and only 163 "routine" vaccinations were performed. It is hoped to appoint a full-time vaccinator in 1960, to move round the Territory, concentrating his efforts on unvaccinated children.

(g) Acute Poliomyelitis.

No cases of acute poliomyelitis were reported during the year, but evidence that the disease continues to smoulder among the African population is provided by the cases that present with the late paralytic effects of the disease. During the year 142 persons, the great majority being children, were immunized against the disease.

(h) Enteric Fever

There was a considerable increase in the number of cases of enteric fever dealt with during the year, viz. 141 cases with 8 deaths, as against 63 cases with 3 deaths in 1958. The majority of the cases occurred in the last quarter of the year, and a dry summer without the usual flushing effect of heavy storms may have been a causative factor.

Whilst the majority of the cases were sporadic, there was some concentration of cases in the Mankaiana district, at Mhlatuzane in the central bushveld area and at Big Bend. Widespread investigation by the Medical Officer of Health and his staff led to the conclusion that the infection was almost certainly fly-borne.

Immunization was carried out in the areas mentioned above as follows:-

	1st Injection		2nd Injection	
	Adults	Children	Adults	Children
Mankaiana	164	255	121	165
Mhlatuzane	149	211	56	81
Big Bend	1480	386	814	234

Total Injections = 4,116.

The "fall-off" between the first and second injections is very noticeable, and is the usual state of affairs, which is most discouraging to the Health staff.

At the new sugar estates at the irrigation schemes in the bushveld, where the erection of mills and other buildings is proceeding, the labourers employed for the period of the building operations are housed under very insanitary conditions, and an outbreak of enteric fever at these places could have serious consequences. Immunization of all labourers is being strongly advised.

/(i).....

(i) Diphtheria.

The small epidemic of diphtheria that started at Motshane in November 1958 did not peter out till January 1959, and accounted for the majority of the 11 cases of diphtheria, with 2 deaths, recorded. In the first 2 months of the year, 2,200 people in this neighbourhood were immunized against diphtheria.

The response of the rural Swazi to prophylactic inoculations in the absence of an epidemic was tried out at the Lubuli and Mhlotsheni clinics, wherethe African nurses in charge of the clinics were asked to persudde the parents of the 6 months - 6 year age group to bring their children up for injections of D-W-T vaccine. The response was considered adequate for the first injection, but the "fall-off" in attendance for the second and third injections was again noticeable. Nevertheless, it is hoped to extend this practice.

The results at Lubuli and Mhlotsheni clinics wwre as follows:-

	First Injection	Second Injection	Third Injection	Approx. Average Monthly Attendance at Clinic.
Mhlotsheni Clinic	348	206	160	600
Lubuli Clinic	277	193	137	300

(j) Meningococcal Meningitis.

Four sporadic cases of this condition were treated this year, all cases again coming from the south of Swaziland.

(k) Other Infectious Diseases

Cases of Measles and Whooping Cough occurred throughout the year, and the number of cases of Measles was again high (768, as against 871 in 1958, the latter figure being much above the average). The number of cases of Whooping-Cough dropped from 653 to 467. An epidemic of Chicken-pox in the late winter and spring resulted in 268 cases being reported.

(l) Dysentery and Gastro-Enteritis.

While the number of cases of bacillary dysentery rose from 416 to 596 (with 3 deaths) and while there was little change in the position as far as amoebiasis was concerned (158 cases with 6 deaths), there was a further marked rise both in the number of cases of infantile gastro-enteritis seen, and in the number of deaths from this condition. In 1958, there were 2,895 cases with 42 deaths, while in 1959 there were 3,597 cases with 48 deaths. There were, in addition, in 1959, a further 13 deatns in cases of gastro-enteritis over 2 years old, and the majority of these were small children.

The cause of the condition in the great majority of cases is, of course, ignorance of the importance of general hygiene, and more particularly, ignorance of the dangers of bottle-feeding, a practice which appears to be on the increase. As stated in previous reports, propaganda on

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the importance of the hygenic preparation and handling of baby foods and similar matters, emanating from out-patient departments and clinics seem to have remarkably little effect on the majority of the population, and it is probable that improvement in these matters is depdndent on the bulk of the population reaching a higher educational standard.

(m) Venereal Diseases.

The tendency noted last year for the number of cases of syphilis to fall whilst the number of cases of gonorrhoea rose has continued, and is well brought out by the figures for the past 10 years, which follow -

	Syphilis	Gonorrhoea.
1950	4,140	1,761
1951	4,608	1,934
1952	4,349	2,096
1953	3,908	1,973
1954	4,098	1,884
1955	3,270	2,420
1956	2,376	2,407
1957	2,151	2,592
1958	2,379	2,719
1959	1,806	3,005

The number of subsequent attendances for veneraal diseases in 1959 was

Syphilis	6,263
Gonorrhoea	1,818

The figures given here are for hospital and clinic attendances, and will not agree with the figures given in the nosological returns in Appendix VIII, page 50, which are hospital figures only.

(n) Tape Worm Infestation

The campaign against tapeworm infestation has been continued, and all cases found at hospitals, clinics and by Malaria Assistants during their tours through the bushveld are given the "single-dose" treatment with dichlorophen.

The number of cases treated in 1959 was as follows:-

By Malaria Assistants	5,172
At Government Clinics	1,515,
At Government Hospitals	987
	7,674,

and the total number of cases treated since the campaign was started in August 1957 is as follows -

1957	9,434
1958	6,951
1959	7,674
	24,059.

While it is still considered early to assess the value of the campaign as far as cysticercosis in meat is concerned, abattoir returns do show an improvement in the number of "measly" carcases rejected, and one farmer who conducts his own "anti-tapeworm campaign" amongst his farm labourers, states that his condemnations of meat have practically ceased. Figures for the Bremersdorp abattoir since regular meat inspection was instituted are as follows:-

	% of carcases affected with "measles."
1953	18%
1954	10%
1955	10%
1956	12%
1957	8%
1958	7%
1959	5%

Figures of "measly carcases" from Swaziland obtained from the Livestock & Meat Industries Control Board, Durban, are as follows:-

1956	9.7%
1958	6.89%
1959	6.28%

(o) Scabies

It is interesting to note the wane of this condition in Swaziland over the past 20 years. For instance the 1932 Medical Department report states

> "The only common skin disease is Scabies, which affects a large proportion of the children",

while in the 1935 report it is said

> "The two common diseases in children are scabies and gastro-enteritis",

and in the 1945 report -

> "The almost universal presence of scabies among the African section of the population is evidence of an equally low standard of hygiene".

To-day the position is vastly different and scabies is seldom seen at Government hospitals and clinics, although it

is said that it is still be no means uncommon among the more backward Swazi in the remoter areas of the Territory.

During the year the children at two schools near Mbabane were examined to assess their nutritional standard, and no cases of scabies were seen at either school, and the condition was reported only 131 times at Government and Mission hospitals in 1959, thus constituting 0.1% of the attendances.

It is a great pity that it is not as easy to teach school children proper food habits and proper village hygiene as it is to teach them to keep themselves clean.

(ii) NUTRITIONAL AND DEFICIENCY DISEASES.

During 1959 there was a further increase in the number of cases of "nutritional diseases", although the number of deaths recorded did fall. The cases dealt with were as follows:-

Malnutrition, unqualified	935,	with 13 deaths,
Pellagra	601	" 3 "
Kwashiorkor	421	" 21 "
Scurvy	53	
	2010.	

This total represents 2.2% of all patients dealt with as against 1.7% in 1958.

The number of cases of "nutritional diseases" recorded since 1952 is as follows:-

1952	147
1953	286
1954	388
1955	330
1956	454
1957	1,016
1958	1,459
1959	2,010

The most striking change in comparing 1959 figures with those of 1958 is the jump in the number of cases of pellagra from 131 in 1958 to 601. The significance of this is not clear, but it should be pointed out that the number of cases of this condition have varied rather markedly over the past years, thus

1955	74
1956	136
1957	338
1958	131
1959	601

The British Red Cross Society is now running Infant Welfare Clinics at Mbabane, Hlatikulu, Stegi and Pigg's Peak, which are being well-patronised, and which are doing very useful work.

A request has been submitted to U.N.I.C.E.F for assistance in a scheme for supplementing the diet of malnourished children with dried skimmed milk. The matter is still under consideration by World Health Organisation and U.N.I.C.E.F.

In an attempt to gain more knowledge on the nutritional standard of the Swazi, a start was made by the writer on the medical examination of school children.

During 1959 it was only possible to examine the children at two small schools, but it is hoped, in the winter of 1960, to be able to examine a significant number of children. Detailed results will not be published until more children have been examined, but preliminary conclusions are that while the younger school children are poor specimens from a nutritional view point, the standard improves with age, and there is little amiss with the teenagers. This fits in with the picture of malnutrition (pellagra excluded) obtained in clinical practice, namely that it is almost entirely a disorder of the post-weaning years and of the few succeeding years.

At one school, the "10 year olds" and "under 10s" were re-examined after having been given a dietary supplement at school of about 20 gms (1 heaped tablespoon) of dried skimmed milk daily, for 5 days a week, for 4 months. The milk for this test was supplied by the British Red Cross Society. The results of the re-examination showed that height and weight increases had been better than average, and that there was a real decrease in the number of signs of vitamin deficiency shown, but the most striking change was in the conditions of the skins, the previously rough dry skins now being smooth and shiny.

Reports have been received that at some of the dairies run by the Land Utilization Department, the idea was prevalent among the suppliers that the removal of the cream took all the goodness out of the milk, and that the separated milk was consequently valueless, and should be thrown away or given to the dogs. Investigations revealed that this state of affairs exists in only a few small areas, but nevertheless a pamphlet on the value of separated milk as a food was prepared, and with the co-operation of the Land Utilization Department, issued from all dairies, and also distributed as widely as possible.

(iii) SANITATION, WATER SUPPLIES AND FOOD SUPPLIES.

General public health duties are carried out by one Health Inspector under the guidance of the Medical Officer of Health. It is hoped shortly to increase the establishment of Health Inspectors, as the coverage which one Health Inspector is able to give to the whole Territory is sketchy in the extreme.

The only notable development to report during 1959 was the commencement of the Mbabane Sewerage Works, which it is expected will be completed by May 1960, and which will at long last remedy the often objectionable conditions existing around Mbabane Hospital and St. Mark's School through waterlogging of the soil from over-burdened french drains. The sewage scheme will also allow the development of the central portion of Mbabane.

General sanitary conditions in the townships have remained fairly satisfactory, but most insanitary conditions exist in the squatter townships which are springing up on the fringes of the larger towns, and the lack of rural sanitation does not cause more trouble only because the rural population is so scattered.

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The report on this side of the work of the Department will be found in Appendix V, page 42.

(iv) HEALTH EDUCATION.

The Medical Officer of Health and his staff have during the year under review given a course of lectures to the pupil Cattle Guards in training at Mpisi Government Farm, covering such subjects as Hygiene and Sanitation, Dairies and Milk Supplies, Water Supplies, Meat Inspection, Venereal Diseases, Typhoid Fever, Small-pox, Diphtheria, Tuberculosis, Malaria and Bilharzia, while the African Agricultural Assistants in training at Mdutshane Experimental Farm received lectures on Hygiene and Sanitation, and on Nutrition, particular attention being paid to the cause and prevention of Kwashiorkor. Probationer nurses from the Raleigh Fitkin Memorial Hospital were given demonstrations on laboratory procedures, and a talk on malaria and bilharzia, whilst nurses from out-lying Nazarene Mission Clinics who were attending a refresher course at the Raleigh Fitkin Memorial Hospital were given a demonstration on malaria and bilharzia.

The writer gave a lecture at the Domestic Science Teachers Refresher Course held in Mbabane in July on the relation of disease to improper feeding, and as stated before, a pamphlet on the food value of separated milk has been circulated.

As in previous years, the Medical Officer of Health and his staff produced an instructive exhibit at the Swaziland Show at Bremersdorp, which was well patronised.

Samples of excellent health education posters have been received from the Health Education Office of the Kenya Medical Department, and it is hoped to attempt some health education along these lines shortly.

CHAPTER 2 - HOSPITALS AND CLINICS.

(a) Government Hospitals and Clinics.

The new wards at Hlatikulu Hospital were brought into use early in the year, as was the new out-patient department and dispensary. Financial consideration did not allow of the rehabilitation of the old central portion of the hospital, but this work is planned for 1960. New diesel engines for the supply of electricity to the hospital were also installed.

The extensions to Mankaiana Hospital were almost completed by the end of the year, and for the most part, occupied.

The staff of this small hospital have had to put up with a great many inconveniences over the long period during which building operations continued, and deserve much credit for the manner in which these difficulties have been overcome, while the hospital work has in fact been on the increase.

Electricity was installed in Pigg's Peak Hospital in November and it is planned in 1960 to enlarge consulting room facilities and to install an X-ray plant.

/A .....

A considerable amount of planning has been carried out on the much-needed extensions to Mbabane Hospital, which it is hoped to start shortly. The present hospital does not lend itself to easy extensions and the sloping site is a further complication. Haphazard additions to the hospital would be likely to lead to an almost unworkable complex, and it is probable that a re-orientation of the present lay-out will have to be the final plan.

Due to the extensions at Hlatikulu and Mankaiana, the number of beds in Government hospitals increased from 264 to 326 in 1959, whilst the daily average number of in-patients in Government hospitals rose from 345 to 392. Total admissions rose from 9,025 to 9,583, while the total number of out-patients dealt with rose from 68,757 to 86,572. Hospitals are often grossly overcrowded and out-patient departments frequently are extremely hard-pressed, when patients may have to be dealt with more rapidly than is desirable, after having been kept waiting an unduly long time.

There was also an increase in the number of patients seen at the clinics, especially at Goedgegun Clinic and Horo Clinic. The total attendances at all Government clinics was 64,513 as against 47,748 in 1958.

Details of the number of cases dealt with at the various Government hospitals and clinics will be found in Appendix VI at page 47 , whilst the detailed nosological returns will be found at Appendix VIII at page 50.

(b) Mission Hospitals and Clinics

Two new ward blocks have been built at the Raleigh Fitkin Memorial Hospital at Bremersdorp, a third ward block is nearing completion and a Physiotherapy Department has been opened. The building was assisted by Government on a £1 for £1 basis. Extensions to the European Wards and to the Nurses Home are now under consideration. The number of beds at this hospital is now 177 and will shortly top the 200 mark.

The extensions to the Good Shepherd Hospital have unfortunately been held up for financial reasons, but it is hoped that they will be completed in 1960.

The number of patients dealt with by Mission Hospitals in 1959 also rose. In-patients increased from 5,886 to 6,562, with a daily average number of in-patients of 279, as against 192 in 1958, while hospital out-patients rose from 28,310 to 37,711, and the number of out-patients seen at clinics rose from 27,001 to 30,559.

Details of the patients seen at the various Mission Hospitals are shown in Appendix VII at page 49.

(c) Havelock Mine Hospital.

The number of Africans who were not mine employees or their dependants, who were treated at Havelock Mine Hospital during 1959 was as follows:-

Number of admissions	231
Daily Average number of In-patients	7
Number of Out-patients -	
(i) New Cases	319
(ii) Re-attendances	19

CHAPTER 3 - MATERNITY & CHILD WELFARE SERVICES.

Ante-natal clinics are held at all Government and Mission Hospitals and at most of the outlying clinics. In previous years, it was necessary to encourage Swazi women to come into hospitals for their confinements, but the maternity wards are now so popular that overcrowding may shortly necessitate restricting admissions to primiparous women and others in whom difficulty is expected.

The number of antenatal examinations and confinements carried out during the past 3 years has been as follows:-

	Antenatal Examinations			Confinements		
	1957	1958	1959	1957	1958	1959
Mbabane Hospital	1998	2212	2068	512	586	436
Hlatikulu Hospital	3456	3183	1373 ++	189	196	247
Mankaiana Hospital	422	486	694	136	147	154
Pigg's Peak Hospital	-	99	636	-	27	146
Raleigh Fitkin Memorial Hospital and Clinics	4557	4888	4998	794	853	1054
Good Shepherd Hospital	+	467	1242	+	137	137
Mahamba Methodist Hospital	+	712	584	+	71	76

+ = Figures not available
++ = Excludes figures for clinics which were previously included.

Child Welfare clinics have continued at the Nazarene Mission health centres, and were introduced during the year at the Government health centres at Sipofaneni, Mhlosheni, and Lubuli, where the following attendances were recorded -

Sipofaneni	1,022
Mhlotsheni	581
Lubuli	305

It is hoped that there will be a further extension in this important work in 1960.

CHAPTER 4 - TRAINING OF AFRICAN NURSES

Nurses are trained at the Ainsworth Dickson Nursing College, attached to the Raleigh Fitkin Memorial Hospital at Bremersdorp, for both the High Commission Territories Nursing Council Certificates and the Swaziland Executive Nursing Committee Certificates. The minimum educational standard for the latter is only Standard 6, and it is hoped that as more candidates with Junior Certificate come forward, to enter

/the .....

the High Commission Territories Nursing Council training, so the lower standard training will fall away.

The well-equipped Ainsworth Dickson Nursing College is capable of training sufficient nurses for the needs of Swaziland.

The results of the examinations held during the year were as follows:-

HIGH COMMISSION TERRITORIES NURSING COUNCIL.

	Passed	Failed
Preliminary Examination in Medical and Surgical Nursing (November 1959)	5	-
Final Examination in Medical and Surgical Nursing (June 1959)	-	1
Final Examination in Medical and Surgical Nursing (November 1959)	3	-

SWAZILAND EXECUTIVE NURSING COMMITTEE

	Passed	Failed
Preliminary Examination in Medical and Surgical Nursing (November 1959)	8	3
Final Examination in Medical and Surgical Nursing (June 1959)	5	1
Final Examination in Medical and Surgical Nursing (November 1959)	1	-
Final Examination in Midwifery (November 1959)	3	5

The number of nurses in training at the end of December 1959 was

1st year	16
2nd year	11
3rd year	11
4th year	10
	48.

CHAPTER 5 - LABORATORY SERVICES.

Small laboratories at Mbabane and Hlatikulu Hospitals, staffed by locally-trained Laboratory Assistants, where the simpler routine examinations are carried out, continue to fulfil a very useful purpose, and during the year dealt with the following specimens

/Mbabane.....

	Mbabane Hospital	Hlatikulu Hospital.
Urines	4,208	1,930
Smears for bacteriological examination	3,020	132
Sputa	1,421	445
Stools	774	192
Bloods	562	202
E.S.R.	1,199	390
Others	101	77
Totals	11,085	3,418

The small clinical pathology laboratory attached to the Health Office in Bremersdorp was closed for some months of the year, owing to the resignation on marriage of the Laboratory Technician, and difficulty was experienced in recruiting a replacement, which was only solved by the temporary appointment of a woman doctor to the post, which is now again vacant. During the year the following examinations were, however, carried out -

	No. examined.	No. positive.
V.D.R.L.	4,126	763
Widal	177	69
Throat Swabs (Diphtheria)	24	Nil
Sputum (T.B.)	56	6
Stool (Bilharzia)	69	17
Urine (Bilharzia)	117	35
Stool (Parasitology)	15	-
Full Blood Counts	36	
Haemoglobin Estimations	35	
C.S.F.	2	
Cultures (Blood)	71	3
Cultures (Various)	30	
Sensitivity Tests	25	
	4,783	

The routine examination of blood slides by the Malaria Control Unit and of urines and stools for bilharzia during field investigations are not, of course, included here, but in the sections dealing with these conditions.

Histological examinations and other more complicated procedures were as before sent to the South African Institute for Medical Research, as were specimens for serological tests for syphilis and for agglutination reactions, when the Bremersdorp laboratory was closed.

/Chapter 6 .....

CHAPTER 6 - VITAL STATISTICS.

The registration of births and deaths is compulsory only in the case of European inhabitants of Swaziland, and available statistics are consequently of limited value. They are as follows:-

Total European Population (1956 Census)	5,932
European births 1959	123
European deaths 1959	31
Deaths of infants under 1 year in 1959	4

The causes of the European deaths were as follows:-

Diseases of the heart and circulatory system	12
Accidental	4
Cerebral Haemmorhage	4
Malignant Neoplasm	3
Broncho pneumonia	3
Senility	2
Tuberculosis	1
Gastro-enteritis	1
Hydrocephalus	1

CHAPTER 7 - PRISONS

Medical inspections of the prisons at Mbabane, Hlatikulu, Bremersdorp and Stegi are carried out at regular intervals, and sanitary conditions have been satisfactory throughout the year. The health of the prisoners has also been satisfactory.

At Mbabane Gaol a small sick-bay has been constructed and a warder has been trained as a medical orderly at Mbabane Hospital. Sick parades are now held in the gaol, which is a great advance on the previous system when large batches of prisoners were led up to the out-patient department at Mbabane Hospital, both from the point of view of lessening the congestion at the out-patient department and from the point of view that reporting sick automatically meant a day off work for the prisoner.

The majority of unmanageable lunatics in the Territory are confined to Mbabane Gaol where they are under medical treatment.

CHAPTER 8 - LEGISLATION.

The following legislation affecting the Medical Department was enacted during the year -

Proclamation No. 24 of 1959, amending the Medical, Dental and Pharmacy Proclamation (Chapter 42 of the Laws of Swaziland), to allow for practice by interns.

Proclamation No. 70 of 1959, amending the Opium and Habit Forming Drug Proclamation (Chapter 46 of the Laws of Swaziland)

/Chapter 9 .....

CHAPTER 9 - FINANCE.

The financial statement of the Department for the period 1st April 1958 to 31st March 1959 is as follows:-

		£	
Revenue			
Hospital, Health Centre and other fees		4,507	
Expenditure			
Personal Emoluments		56,217	
Travelling Expenses		2,590	
Allowances and Fees		3,024	
Maintenance of Patients		24,993	
Laboratory Services		784	
Maintenance of Lunatics		3,440	
Hospital Equipment		7,297	
Subsidies for Medical Services: Church of Nazarene Mission of South Africa £17,106; Roman Catholic Mission £100; Catholic Mission, Stegi £2,853; Mahamba Methodist Mission £2,575; Our Lady of Sorrows Clinic £200; Red Cross £75		22,909	
Anti-Malaria Measures		297	
High Commission Territories Nursing Council		30	
Upkeep of Grounds		241	
Upkeep of X-Ray Plants		1,767	
Other Transport Charges		69	
Bilharzia Control		758	
Upkeep of Vehicles, etc.		851	
Contributions C.D.W. Schemes			
D.2713 Anti-Malaria Campaign		7,334	
D.2715 Leper Settlement		1,147	
Temporary Reliefs		954	
Purchase & Replacement of Vehicles		1,014	
Specialist Treatment for Indigents and Vaccinations		115	
Total Territorial Expenditure			137,255
C.D.W. Schemes Expenditure			
D.2713 Anti-malaria & Public Health		11,962	
D.2715 Leper Settlement		1,729	
		13,691	
LESS Territorial Contribution			
D.2713 Anti-malaria & Public Health	8,222		
D.2715 Leper Settlement	1,297	9,519	4,172
Total expenditure on Medical & Sanitary Services			145,510
Total Revenue of Territory			1,413,686
The relationship of Medical expenditure (excluding C.D.W. Fund expenditure(to total revenue of Territory			9.9%

CONCLUSION

I wish to express my sincere appreciation of the loyal and efficient manner in which members of the Department carried out their duties during the year, often under extremely difficult conditions.

B. D. WHITWORTH

DIRECTOR OF MEDICAL SERVICES.

APPENDIX I.

MEDICAL DEPARTMENT STAFFING (AS AT 31.12.59)

(a) DIVISION I AND II.

	Name.	Station
Director of Medical Services	Dr. B.D.Whitworth	Mbabane
1 Medical Officer of Health	Dr. R. D. Gauldie	Bremersdorp
8 Medical Officers	Dr. O. Arnheim	Hlatikulu
	Dr. L.E.D.F. Joubert	Mbabane
	Dr. A. P. Zwane	Hlatikulu
	Dr. J. F. Alexander	Mbabane
	Dr. F. Friedman	Pigg's Peak
	Dr. A. M. Nxumalo	Mbabane
	Dr. J.M.L. Klopper	Hlatikulu
	Dr. L. Becker	Mbabane
1 Intern	Dr. M. Bedford	Mbabane.
2 Pharmacist/Storekeepers	Mr. J.L. van der Vyver	Hlatikulu
	Mr. G. R. Gibbon	Mbabane
2 Matrons	Miss E. M. Bailey	Mbabane
	Miss J. Wilson	Hlatikulu
11 Nursing Sisters	Miss M.A. von Wissell	Mbabane
	Miss D. E. Burns	Hlatikulu
	Miss A. Martin	Hluti Health Centre
	Mrs. H. Perkins	Mankaiana
	Mrs. P. T. Mdiniso	Mbabane
	Mrs. A.C.T. Mabuza	Mbabane
	Mrs. M. Clements	Mbabane
	Mrs. S. M. Cooper	Mbabane
	Mrs. A. L. Ogden	Hlatikulu
	Mrs. S. Dowling	Goedgegun Health Centre
	Miss J. Wilhelm	Mbabane
1 Radiographer	Miss R. J. O'Shea	Mbabane
1 Laboratory Technician	Dr. H. Seidel	Bremersdorp
3 Health Inspectors	Mr. G. J. van Eeden	Bremersdorp
	Mr. D.MM. Eckard	Bremersdorp
	Mr. J. F. Bateson	Bremersdorp
3 Medical Assistants	Mr. J. B. Mwali	Hlatikulu
	Mr. E. S. Njenje	Mbabane
	Mr. A. F. K. Phiri	Mankaiana
1 Housekeeper (Mbabane Hospital)	Mrs. M. McCall	Mbabane
1 Accountant	Mr. J. H. Thomas	Mbabane
1 Lady Clerk	Mrs. D.M.C. Lane	Mbabane
1 Clerk (Higher Grade)	Mr. M. Mdiniso	Mbabane

(b) DIVISION III.

3 Dispensers
1 Pupil Dispenser
3 Laboratory Assistants

/3 Clerks .....

Division III continued.

3 Clerks
65 Nurses
3 Outpatient Attendants
6 Ambulance and Truck Drivers
1 Senior Malaria Assistant
10 Malaria Assistants
3 Dispensary Orderlies
9 Ward Attendants
17 Orderlies
3 Nurse Aides
15 Laundresses
2 Seamstresses
2 Office Messengers
1 Night Watchman
3 Groundsmen
4 Cooks
4 Assistant Cooks
5 Housemaids.

APPOINTMENTS, PROMOTIONS, RESIGNATIONS AND RETIREMENTS IN DIVISION I AND II DURING 1959.

APPOINTMENTS.

Mr. J. F. Bateson	Health Inspector	1.2.59
Dr. A. M. Nxumalo	Medical Officer	16.2.59
Miss M. J. Bayliss	Nursing Sister	7.5.59
Mrs. M. Clements	Nursing Sister	25.6.59
Mr. G. R. Gibbon	Pharmacist-Storekeeper	1.7.59
Miss J. Wilhelm	Nursing Sister	8.8.59
Mrs. S. M. Cooper	Nursing Sister	1.9.59
Mrs. S. Dowling	Nursing Sister	1.9.59
Dr. L. Becker	Medical Officer (Locum Tenens)	7.9.59
Mrs. A. L. Ogden	Nursing Sister	17.11.59
Dr. M. Bedford	Intern	1.12.59.

RESIGNATIONS.

Miss L. Sumner	Nursing Sister	14.1.59
Miss A. Thompson	Laboratory Technician	17.2.59
Miss M. Smith	Pharmacist-Storekeeper	25.3.59
Miss M. J. Bayliss	Nursing Sister	30.6.59
Miss J. Hansmeyer	Nursing Sister	1.7.59
Miss E. Dunning	Nursing Sister	31.7.59
Miss A. McKillop	Nursing Sister	25.8.59
Miss D. Chapman	Nursing Sister	6.10.59
Miss J.M. van der Meulen	Nursing Sister	2.11.59
Dr. H. A. Jones	Medical Officer	30.11.59

MALARIA IN SWAZILAND.
1958-59 TRANSMISSION SEASON.

1. CLIMATIC CONDITIONS.

Intermittent showers of rain throughout the Territory, which favoured the breeding of A. gambiae, were fortunately followed by dry spells. In spite of these dry conditions, breeding of this malaria vector has been detected over a larger area of the bushveld than usual, since control commenced.

Weather conditions for the second half of the transmission season were as follows:-

JANUARY 1959.	RAINFALL		NO. OF	ACTUAL.		MEAN.	
	INS.	MMS.	DAYS	MAX.	MIN.	MAX.	MIN.
Balegane	6.08	172.7	13	39.1	16.4	30.0	20.1
Bremersdorp	3.99	101.3	14	35.5	12.1	28.6	18.5
Stegi	6.37	161.9	6	34.4	11	27.9	16
Gollel	3.80	96.5	10	40	12.6	31.0	19.9.
FEBRUARY 1959							
Balegane	5.46	138.7	6	34.6	15.0	30.9	19.1
Bremersdorp	1.91	48.5	10	34.4	14.4	29.6	18.5
Stegi	4.25	108.0	6	34.0	12.4	28.7	16.8
Gollel	1.72	43.5	7	37.4	14.0	32.0	20.3
MARCH 1959							
Balegane	1.86	47.2	7	34.6	14.2	30.1	18.4
Bremersdorp	5.59	142.0	9	34.1	12.7	28.8	17.4
Stegi	2.71	68.9	6	32.8	11.0	27.8	16.9
Gollel	1.00	25.5	6	36.8	14.8	32.0	19.2
APRIL 1959							
Balegane	0.25	64.0	4	-	10.4	-	16.6
Bremersdorp	.11	28	3	36.8	12.4	29.3	16.0
Stegi	.59	150	1	35.0	13.0	29.7	16.1
Gollel	.12	30	1	39.2	12.6	32.0	18.3
MAY 1959							
Balegane	2.45	62.2	6	-	6.5	-	10.0
Bremersdorp	2.88	73.0	5	35.7	7.5	27.0	10.8
Stegi	1.73	43.9	3	34.5	8.6	25.3	12.5
Gollel	2.89	73.4	4	37.0	5.0	27.9	11.3

2. SURVEILLANCE ACTIVITIES.

Active surveillance had been continued throughout the malarious areas, on the lines as previously reported.

It was, however, necessary to engage one additional labourer on chemo-prophylactic measures at the Big Bend Irrigation scheme.

An official was also posted at an unauthorized gateway on the Mozambique-Swaziland border. Blood slides were taken, and Chloroquin and Daraprim issued, to each individual

/who ...

who made use of this entrance.

The following observations were made during the period March - July 1959 on persons entering Swaziland -

Of 321 adults, 32 showed blood slides positive for Plasmodium Falciparium,
Of 25 children, (1-15 years), 4 showed blood slides positive for Plasmodium Falciparium
Of 25 infants (0-1 year), 10 showed blood slides positive for Plasmodium Falciparium.

BLOODSLIDES TAKEN FROM JANUARY-JULY 1959.

	Infants 0-1 year	Children 1-15 years	Adults.
January	333	1,497	23
February	413	1,723	75
March	442	1,821	112
April	495	2.170	173
May	249	1,200	154
June	149	745	98
July	30	116	168
	2,111	9,272	803.

TOTAL NUMBER OF SLIDES EXAMINED DURING 1958-59 SEASON.

	FIELD	HOSPITAL.
September to December 1958	3,442	15
January to June 1959	12,186	39
	15,628	54

TOTAL NUMBER OF POSITIVE SLIDES IN 1958-59 SEASON.

Indigenous	30
Imported	135
	165.

POSITIVE SLIDES, JANUARY-JULY 1959.

	INFANTS.		CHILDREN		ADULTS	
	Indigenous	Imported	Indigenous	Imported	Indigenous	Imported
January	-	-	1	4	-	2
February	-	-	1	3	3	12
March	-	3	2	7	2	5
April	-	5	2	1	4	18
May	-	-	4	6	-	7
June	-	1	2	8	-	11
July	-	3	3	-	-	19
	-	12	15	29	9	74.

ENTOMOLOGY

Number of huts Test-Sprayed using Pyrethrum.

October-December	1958	2,926
January-May	1959	9,859
Total		12,785

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MOSQUITOS FOUND IN HUTS TEST SPRAYED.

	A. gambiae	A. funestus	A.pretoriunsis	A. squamosus	A.leesoni	A. coustani	A. marshalli	A. rufipes	A. demeilloni	A. longipalpis.
October	1 f	8 f	-	-	1 m	2 f	-	-	-	-
November	-	-	-	-	-	-	2 f	1 f 1 m	-	-
December	-	2 f	-	-	1 m	1 f	3 f	-	-	-
January	11 f	3 f 1 m	-	-	4 f 1 m	-	7 f	6 f	5 f	1 f 1 m
February	11 f 1 m	-	-	-	-	4 f	1 f	-	-	-
March	37 f 3 m	-	14 f	-	-	-	31 f	-	1 f	2 f
April	1 f	-	-	-	-	1 f	-	-	3 f 1 m	-
May	-	1 f	-	-	-	-	-	-	-	-
	65	15	14	-	7	8	44	8	10	4

(f = female; m = male).

Forty of the A. gambiae were found in 8 huts tested on the Mozambique border between Stegi and Abercorn Drift. This isolated village, situated at the foot of the Ubombo Hills on the Mozambique border had never been included in previous control work.

ANOPHELES LARVAE IDENTIFIED.

The following anopheles larvae were collected and identified -

	A. gambiae	A. funestus	A.fun.var.confusus	A.leesoni	A.maculipalpis	A. squamosus	A.squam.var.Cyd.	A. coustani	A. pretoriensis	A. demeilloni	A. cinereus	A. marshalli	A. rufipes	A. theileri
October	22	44	-	1	321	5	60	55	300	31	26	3	43	1
November	128	17	-	-	94	-	-	33	259	30	-	17	28	-
December	4	22	-	1	89	138	8	76	256	5	-	-	56	-
January	144	16	1	3	92	40	39	51	447	8	-	-	103	-
February	295	27	-	2	210	220	3	18	544	-	-	-	144	-
March	493	36	-	3	174	50	73	95	650	2	-	4	158	-
April	542	25	-	4	70	23	38	169	530	-	-	-	96	5
May	93	30	-	5	6	-	-	29	29	6	4	-	61	-

/Larvae....

Larvae of A. gambiae and A. funestus were found throughout the bushveld areas. Breeding of the malaria vectors appeared more extensively and the number of larvae found exceeded any since the inception of control measures in about 1949-50.

NIGHT CATCHES.

Hand catching of mosquitos was conducted at various places. It would appear from these observations that A. gambiae were still reacting in the same manner as found by the World Health Organisation team in 1958. It was interesting to note that A. gambiae on two occasions, (only 2 mosquitos in each case) alighted on man outside a native hut in a compound where no cattle kraals existed, viz. at Nsoko and at the Swaziland Irrigation Scheme. One engorged A. gambiae was found on an African within a few feet from a cattle kraal at the Msimpofu River. Arrangements have now been made to have precipitin tests made of bloodfed mosquitos during the next transmission season.

Details of nightcatches are tabulated as follows:-

NIGHT CATCHES BETWEEN 6.30 P.M. AND 12 MIDNIGHT.

DATE AND PLACE & SPECIES FOUND.	Biting man inside Native hut	Resting inside Native hut.	Biting man outside Native hut	Resting outside Native hut	Biting cattle	Resting at cattle kraal	REMARKS.
13.11.58 Nyatan Dip							Funestus breeding near - 4 huts,7 people 15 cattle;kraal 15 yards from huts.
A. squamosus	-	-	-	-	20	-	
A. rufipes	-	-	1	-	10	4	
A. maculipalpis	-	-	-	-	1	1	
A. pretoriensis	-	-	-	-	-	2	
A.marshalli	-	-	-	-	-	2	
5.3.59 Nkambeni (Nyoka-Nyoka River Area)							4 huts,7 people 12 cattle;kraal 40 yards from huts.
A. gambiae	-	-	-	-	-	33	
A. squamosus	-	-	-	-	-	6	
A. coustani	-	-	-	-	-	1	
A. Rufipes	-	-	-	-	-	1	
8.3.59 Nsoko (Ingwavuma River Area)							Test spray 5 huts at 9 p.m
A. squamosus	-	-	1	-	-	-	
9.3.59 Maloma	-	-	-	-	-	-	Nil mosquitos; test 2 huts at 9 p.m.
9.4.59 Nkambeni (Nyoka-Nyoka River Area)							Repeat No. 1. 4 huts;7 people 12 cattle; kraal 4 yards from huts
A. gambiae	-	-	-	-	96	83	
A. funestus	-	-	-	-	-	2	
A. marshalli	-	-	-	-	-	1	
A. squamosus	-	-	-	-	4	2	

/13.4.59 .....

DATE AND PLACE AND SPECIES FOUND.	Biting man inside Native hut	Resting inside Native hut.	Biting man outside Native hut.	Resting outside Native hut.	Biting cattle	Resting at cattle kraal.	REMARKS
13.4.59 SINCENI (Tofus Stream).							
A. funestus	-	-	-	-	-	1	Funestus breeding 150 yards from 6 huts, 8 people, 15 cattle; cattle kraal 10 yds from huts.
A. pretoriensis	-	-	-	-	4	2	
A. squamosus	-	-	-	-	2	2	
A. coustani	-	-	-	-	1	-	
A. de Meilloni	-	-	-	-	-	1	
14.4.59 MSIMPOFU RIVER (near Usutu River).							
A. gambiae	-	-	1	-	-	7	5 huts, 6 people, 10 cattle; cattle kraal 8 yards from huts.
A. coustani	-	-	2	-	-	2	
A pretoriensis	-	-	1	-	-	3	
A. nili	-	-	1	-	-	3	
A. squamosus	-	-	1	-	-	5	
A. marshalli	-	-	-	-	-	1	
16.4.59 MPAKA (Stegi Bushveld).							
A. gambiae	-	-	-	-	5	1	12 huts, 15 people, 30 cattle; cattle kraal 100 yds from huts.
A. squamosus	-	-	1	-	15	5	
A. rufipes	-	-	-	-	1	1	
A. marshalli	-	-	-	-	1	-	
A. coustani	-	-	-	-	1	-	
20.4.59 SHELETAN (Nyatan River)							
A. squamosus	1	-	1	-	25	23	6 huts, 12 people, 20 cattle; cattle kraal 10 yds from huts.
A. de Meilloni	-	-	1	-	-	1	
A. rufipes	-	-	-	-	1	1	
21.4.59. BIG BEND (Ubombo No. 2 Compound.)							
A. coustani	30	-	35	-	-	-	Large compound no cattle near.
A. marshalli	4	-	1	-	-	-	
A. de Meilloni	-	-	1	-	-	-	
A. squamosus	-	-	1	-	-	-	
21.4.59 BIG BEND (Eliot's Compound)							
A. coustani	11	-	43	-	-	-	Large compound no cattle.
A. marshalli	2	-	9	-	-	-	
A. squamosus	-	-	3	-	-	-	
A. de Meilloni	-	-	1	-	-	-	

/21.4.59.....

DATE AND PLACE AND SPECIES FOUND.	Biting man inside Native hut.	Resting inside Native hut.	Biting man outside Native hut	Resting outside Native hut.	Biting cattle	Resting at cattle kraal	REMARKS
21.4.59 BIG BEND (Ubombo No. 1 Compound).							
A. coustani	5	-	35	-	-	-	Large compound; no cattle.
A. squamosus	1	-	5	-	-	-	
A. marshalli	1	-	-	-	-	-	
23.4.59 LUBULI. (Near Ingwavuma River).							
A. funestus	-	-	-	-	2	5	Adverse weather conditions; windy. 4 huts, 5 people, 12 cattle 20 yds from huts.
A. gambiae	-	-	-	-	-	1	
A. de Meilloni	-	-	-	-	2	1	
A. marshalli	-	-	-	-	-	1	
A. squamosus	-	-	-	-	-	11	
A. rufipes	-	-	-	-	-	1	
A. nili	-	-	-	-	-	1	
A. pretoriensis	-	-	-	-	-	2	
23.4.59 NSOKO. (Near Ingwavuma River).							
A. gambiae	-	-	2	-	-	-	No cattle near. P.W.D. Compound 12 persons.
A. squamosus	-	-	11	-	-	-	
A. marshalli	-	-	3	-	-	-	
27.4.59 SWAZILAND IRRIGATION SCHEME TUNZINI.							
A. gambiae	-	-	-	-	-	1	Huts 1 mile from cattle kraal, about 300 head of cattle; Cold weather and windy.
A. funestus	-	-	-	-	-	2	
A. squamosus	-	-	-	-	-	5	
A. macupipalpis	-	-	-	-	-	2	
A. de Meilloni	-	-	-	-	-	3	
A. marshalli	-	-	-	-	-	2	
28.4.59 SWAZILAND IRRIGATION.SCHEME. Centre Dip.							
A. gambiae	-	-	2	-	-	-	Large compound; no cattle near.
A. funestus	-	-	1	-	-	-	
A. squamosus	-	-	6	-	-	-	
A. coustani	-	-	4	-	-	-	
A. de Meilloni	-	-	1	-	-	-	
A. rufipes	-	-	1	-	-	-	
29.4.59 NKAMBENI (Nyoka-Nyoka River)							
A. gambiae	-	-	-	-	7	18	Adverse weather conditions; 4 huts, 7 people, 12 cattle 40 yds from huts.
A. squamosus	-	-	-	-	3	9	
A. maculipalpis	-	-	-	-	-	1	

/12.6.59 ......

DATE AND PLACE AND SPECIES FOUND.	Biting man inside Native huts	Resting inside Native huts.	Biting man outside Native huts	Resting outside Native huts.	Biting cattle	Resting at cattle kraal.	REMARKS
12.6.59 MTINDEKWA (near Big Bend).	–	–	–	–	–	–	Breeding of A. gambiae only. No adults found.
SUMMARY.							
A. gambiae	–	–	5	–	108	144	
A. funestus	–	–	1	–	2	10	
A. coustani	46	–	119	–	2	3	
A. squamosus	2	–	30	–	69	68	
A. rufipes	–	–	2	–	12	8	
A. maculipalpis	–	–	–	–	1	4	
A. pretoriensis	–	–	1	–	4	9	
A. marshalli	5	–	13	–	1	7	
A. de Meilloni	–	–	4	–	2	6	
A.nili	–	–	1	–	–	4	

G. J. VAN EEDEN

HEALTH INSPECTOR.

APPENDIX III

REPORT ON BILHARZIA CONTROL ACTIVITIES, 1959.

Throughout the year Epidemiological and Ecological Surveys have continued. The aim of obtaining a complete picture of the Bilharzia situation in the territory has almost been achieved, there remain only a few areas yet to be surveyed to complete the picture.

From the findings of the survey, it is clear that the two types of Bilharzia (S. hameatobium and S. mansoni) have established themselves in the territory. S. haematobium is widely spread throughout the lowveld and middleveld, but is not encountered in the highveld above 3,000 feet. S. mansoni on the other hand is confined mainly to the irrigation projects in the eastern and north eastern parts of the lowveld. Where cases are found in other areas, the number are very small, and it is always possible to elicit a history of their having visited one or other of the irrigation projects where the disease could be contracted.

Irrigation projects have been shown to be the main sources of infection for S. mansoni, and a common source for S. haematobium. Wherever a high incidence of the disease is encountered, the source will always be found to be an irrigation system, slow-flowing streams, stagnant pools or storage dams. The large rivers are not considered to be serious sources of infection, because there are always very few snails in these rivers, and also because the large volume of water so dilutes the cercariae that may be present that the chances of contracting the disease are very remote. This fact is borne out by the findings at Sipofaneni where there is no bilharzia in spite of the fact that the Usutu River is used by all the people in the neighbourhood.

This statement that large rivers are not considered a source of danger must be qualified, as it may be inferred that river bathing is condoned by the Health Department. Large rivers may, during their course, form pools of slow flowing water along their banks. These pools are usually warmer than the river itself and very often they harbour the intermediate molluscan host, as the rate of flow is one of the factors determining a suitable habitat. The pool being warmer is very often more attractive to bathers and the result of bathing in such a pool might be disastrous. The disease was actually contracted in this way by a group of picnicers on the banks of the Lomati River when 80% of them went down with intestinal bilharzia 6 to 8 weeks after a memorable picnic.

The following table shows the relationship between the incidence of the disease, the source of infection and the geographical situation -

/Place .....

PLACE	Source of Infection.	Geographical Situation	Prevalence Rate %	
			S.haem.	S.mansoni
Ngonini Estates	Irrigation Canals & Dams	Lowveld	25	32
Mananga	" "	"	45	41
Mhlume	" "	"	41	20
Big Bend	" "	"	54	5
Ubombo Ranches	" "	"	43	19
Malkerns	" "	Middleveld	19	-
Lubuli	" "	Lowveld	62	3
Balegane	Dam	"	17	12
Gollel	?	"	17	4
St. Phillips	?	"	15	2
Maloma	?	"	13	4
Hluti	Slow Flowing Streams	Middleveld	8	-
Bethal Mission Hluti	" "	"	46	-
Esinceni	?	"	16	-
Sipofaneni	?	Lowveld	-	1
Ponjwana	Dam	Middleveld	40	-
Manzini	Pools & Slow Streams	"	24	3
Mathapha	Dams & Slow Streams	"	43	-
Kwaluseni	Dams	"	31	-
Lobamba	Dams	"	47	-
Mbabane	Nil	Highveld	-	-
Havelock	Nil	"	-	-
Stegi	Dams	Middleveld	30	-
Stegi (Ebenezer)	Dams	"	20	-
Nomahasha	"	"	35	3
Kubuta (Bethany Mission School)	Slow Flowing Streams	"	24	-
Kubuta (Itemba Mission)	" "	"	41	-
Mhlotsheni	" "	"	17	-
Ezulwini	" "	"	31	-
Forbes Reef	" "	Highveld	1	-

THE MZIMNENE CATCHMENT AREA.

The Snail Control Pilot Project in the Mzimnene catchment area was abandoned at the end of 1958. It was clearly shown that the application of Copper Sulphate, though it reduced the snail population, did not have any effect on the transmission of the disease which remained at a level equal to that pertaining prior to the commencement of the molluscicide application.

Within three months of abandoning the molluscicide the snail population had grown considerably. A new method of snail destruction had been demonstrated to members of the Health Office staff at Tzaneen in the Eastern Transvaal.

The method was reported to give very good results and in view of the rapid re-population of the waters of the Mzimnene catchment area, it was decided to re-introduce control measures using this new technique.

The technique consisted of mixing Copper Sulphate with sand in the proportion of 1 lb. copper to 4 lbs. sand. This

/mixture.....

mixture is applied by broadcasting it on the water, paying particular attention to weeds along the sides of the pool, stream, canal etc.

Theoretically the sand and Copper Sulphate is supposed to be able to get in amongst the water weeds and there liberate the copper in a manner that is not possible when the molluscicide is applied as a liquid spray. The aim is to apply Copper Sulphate to give a 20 p.p.m concentration throughout the volume of water being treated.

The sand and copper mixture was applied throughout the area at regular intervals of 5-6 weeks. After each application the waters were surveyed for snails. The results were most unsatisfactory, and once again the project has been abandoned as it is considered a waste of money to continue under the circumstances.

The following table shows the poop molluscicidal effect of the new system -

	No. of snails found during the 3 months prior to start of new project.	No.of snails found after sulphation during last two months of project
January 1959	184 live	Nov. 1959 42 live 94 dead
February 1959	860 live	Dec. 1959 268 live Nil dead
March 1959	374 live.	

In this table only the intermediate host of S. haematobium has been considered, viz. B. physopsis Africana.

It is obvious that the system has proved a failure.

In view of these findings, no further efforts at control will be undertaken in the area until some more satisfactory molluscicide becomes available.

SNAIL SURVEYS:

The following Snail Surveys were carried out during the year -

Place	Physopsis	Biomphalaria
S.A.G.M. Bethany, Bremersdorp	24 (3+ve)	3
Havelock	0	0
Lomati River (near Ngonini)	33	52
Experimental Station, Mdutshane	0	0
Usutshwana River ..	247	0
Blackwood Farm, Bremersdorp	0	0
Spencer's Plantations, Malagwane	0	0
White Umbuluzi River (Capt. Wallis)	5	0
2 Dams on North side of Stegi/ Croydon junction	0	0
Horo-Balegane	44	66
Mtambama Agea	0	1
Hlatikulu "	0	0
Worthington, Big Bend Ranches	13	43

/Irrigation......

IRRIGATION SCHEMES.

No special bilharzia control projects have been adopted on irrigation schemes this year. Due to various causes, the proposed screening project at Swaziland Irrigation Scheme could not be completed.

A step in the right direction towards bilharzia control on these schemes has been the building of proper housing for the labourers, a pure and wholesome water supply and proper sewage disposal systems.

These improvements should assist in limiting the contact between man and infected water supplies, also in reducing the contact of human excrement with water supplies. These two factors are of great importance in the continued transmission of the disease. If they can be reduced to a minimum or eliminated completely then bilharzia transmission might be reduced or interrupted.

A further improvement in the Irrigation Schemes might be the provision of proper swimming pools which would keep the children out of the infected canals. This aspect of control will be pursued further in future. A major snag, of course, will be the economic factor.

The housing schemes on these projects have by no means been completed yet, but a start has been made.

The results of ecological surveys carried out at the Irrigation Schemes during the past two years are as follows -

PLACE	SEASON	BIO-MPH.	PHY-SOP.	C.S.R. BIOMP.	C.S.R. PHYSOP	AVER. H_2O TEMP.	AVER. Ph OF H_2O	VEGE-TATION.
MANANGA RANCHES	Spring 1958	1015	138	0%	0%	75°F	8.7	Fairly dense.
	Summer '59	949	49	0.1% (1+ve)	0%	83°F	8.0	Denser
	Winter '59	425	128	0%	1.5% (1+ve)	65°F	7.8	As in Summer
NGONINI ESTATES	Spring 1958	179	138	0.55% (1+ve)	0.72% (1+ve)	82.3°F	7.0	Sparse
	Summer 1958	470	543	0%	1.1% (4+ve)	82.6°F	7.6	Sparse
	Winter 1959	109	294	0%	0%	61.5°F	7.5	Sparse
UBOMBO RANCHES	Spring 1958	519	18	0.19% (1+ve)	6.6% (3+ve)	78.8°F	8.2	Medium
	Summer 1959	97	70	0%	1.4% (1+ve)	81°F	8.0	Medium
	Winter 1959	172	3	0%	0%	66°F	8.0	Medium
BIG BEND RANCHES	Spring 1958	3	7	0%	0%	75.4°F	8.0	Sparse
	Summer 1959	-	-	0%	0%	80.5°F	8.0	Sparse
	Winter 1959	14	8	0%	25% (2+ve)	69.0°F	8.1	Sparse

/Crooke's ......

PLACE	SEASON	BIO- MPH.	PHY- SOP.	C.S.R. BIOMP.	C.S.R. PHYSOP	AVER. H_2O TEMP.	AVER. Ph OF H_2O	VEGE- TATION
CROOKE' PLANTATIONS.	Spring 1958	340	100	0%	2% (2+ve)	$71.3^{\circ}F$	8.12	Medium
	Summer 1959	241	58	0.83% (2+ve)	1.72% (1+ve)	$81.0^{\circ}F$	8.0	Denser
	Winter 1959	442	140	0%	0%	$65.3^{\circ}F$	8.1	As in Spring

C.S.R. = Cercariae Shedding Rate.

PARASITOLOGICAL SURVEYS:

These have continued throughout the year as part of the bilharzia control programme, the purpose being to obtain base line data essential for assessing the value of any control schemes that may be undertaken in the future and to give a clear picture of the bilharzia situation in the territory.

The following table shows the prevalence of bladder and intestinal bilharzia in the areas surveyed during the year -

Age Group	S. HAEMATOBIUM No. Exam.	No. Pos.	% Pos.	S. MANSONI. No. Exam.	No. Pos.	% Pos.
NGONINI ESTATES.						
0 - 10 years	4	2	50	10	2	20
11- 20 "	9	3	33.3	11	1	9
21-30 "	24	4	16.7	24	3	12.5
30 + "	15	2	13.3	15	1	6.6
Total	52	11	21.1	60	7	11.7
STEGI URBAN AREA						
0 - 10 years	17	3	17.6	118	Stool specimens from all age groups gave 1 positive for S. mansoni	
11-20 "	23	4	17.4			
21-30 "	34	3	9.0			
30 + "	49	2	4.0			
Total	123	12	9.8			
MBULUZI-MBABANE DISTRICT.						
0 - 10 years	30	1	3.3	30	0	0
11-20 "	167	17	10.2	167	2	1.2
21- 30 "	11	1	9.0	11	0	0
30 + "	1	0	0	1	0	0
Total	209	19	9	209	2	0.95
MHLUME.						
0 - 10 years	59	32	52.5	59	18	30.5
11- 20 "	100	52	52	100	16	16.
21 - 30 "	57	20	35.	57	13	22.8
30 + "	57	9	15.8	57	9	15.8
Total	273	113	41.4	273	56	20.5

/Ponjwana .....

Age Group.	S. HAEMATOBIUM No.Exam.	No.Pos.	% Pos.	S. MANSONI. No.Exam.	No.Pos.	% Pos.
PONJWANA GOVERNMENT SCHOOL.						
0 - 10 years	43	15	34.1	43	0	0
11- 20 "	46	21	45.6	46	0	0
Total	89	36	40.5	89	0	0
ESINCENI MISSION SCHOOL						
0 - 10 years	40	7	17.5	40	0	0
11 - 20 "	21	3	14.3	21	0	0
Total	61	10	16.4	61	0	0
SIPOFANENI						
0 - 10 years	45	0	0	45	0	0
11 - 20 "	8	0	0	8	0	0
21 - 30 "	6	0	0	6	0	0
30 + "	13	0	0	13	1	7.7
Total	72	0	0	72	1	1.4
OTHANDWENI MISSION SCHOOL.						
0 - 10 years	9	1	11	No S.	mansoni	
11 - 20 "	11	0	0			
Total	20	1	5			
NOMAHASHA						
0 - 10 years	79	11	14	79	0	0
11 - 20 "	176	78	44	176	7	4
21 - 30 "	2	1	50	2	0	0
Total	257	90	35	257	7	2.7
MALOMA (OIAGENI MISSION SCHOOL)						
0 - 10 years	7	1	14.3	7	1	14.3
11 - 20 "	16	2	12.5	16	0	0
Total	23	3	13.0	23	1	4.35
HLUTI, FLORENCE MISSION SCHOOL.						
0 - 10 years	47	0	0	44	0	0
11 - 20 "	69	9	13	60	0	0
Total	116	9	7.75	104	0	0
GOLLEL GOVERNMENT SCHOOL.						
0 - 10 years	42	5	12	42	0	0
11- 20 "	35	8	23	35	3	8.5
Total	77	13	17	77	3	4.

/Lubuli .....

	S. HAEMATOBIUM			S. MANSONI.		
Age Group	No. Exam.	No.Pos.	% Pos.	No.Exam.	No.Pos.	% Pos.
LUBULI, CATHOLIC SCHOOL						
0 - 10 years⅓	28	13	46.4	28	2	7.1
11 - 20 "	33	35	76.0	33	0	0
Total	61	38	62.3	61	2	3.3
ST. PHILLIPS.						
0 - 10 years	11	1	9.0	11	1	9.0
11 - 20 "	84	14	16.6	84	1	1.2
21 - 30 "	2	0	0.0	2	0	0.0
Total	97	15	15,5	97	2	2,0
BALEGANE RANCH.						
0 - 10 years	12	3	25.0	12	0	0
11 - 20 "	15	7	46.4	16	1	6.25
21 - 30 "	15	0	0	15	2	13.3
30 + "	16	0	0	16	4	25.0
Total	58	10	17.24	59	7	11.8
FORBES REEF NKABA SCHOOL.						
0 - 10 years	48	0	0	48	0	0
11 - 20 "	52	1	1.9	52	0	0
Total	100	1	1.0	100	0	0
MBABANE CENTRAL SCHOOL						
0 - 10 years	113	4	3.5	112	1	0.9
11 - 20 "	146	4	2.74	141	1	0.7
Total	259	8	3.0	253	2	0.8
EZULWINI						
0 - 10 years	28	6	21.4	28	0	0
11 - 20 "	57	20	35.0	57	0	0
Total	85	26	30.6	85	0	0
MHLOTSHENI						
0 - 10 years	41	5	12.2	41	0	0
11 - 20 "	129	24	18.6	126	0	0
Total	170	29	17.0	167	0	0
KUBUTA, ITEMBA MISSION SCHOOL						
0 - 10 years	10	1	10.0	10	0	0
11 - 20 "	24	13	54.0	24	0	0
Total	34	14	41.0	34	0	0
KUBUTA, BETHANY MISSION SCHOOL						
0 - 10 years	16	4	25.0	16	0	0
11 - 20 "	22	5	22.7	21	0	0
Total	38	9	23.7	37	0	0

/All .....

All the data obtained from the survey when complete will be the subject of a full report.

The following table shows the prevalence of other intestinal helminths in the areas surveyed during the year -

PREVALENCE RATES OF OTHER PARASITIC HELMINTHS FOUND DURING ROUTINE BILHARZIA SURVEYS.

PLACE.	ASCARIS LUMBRICOIDES	TAENIA SAGINATA	TRICHURIS TRICHURIA	ENTEROBIUS VERMICULTA	STRONGYLOIDES SPP	H. NANA
Ngonini Estates	5%	-	-	1.2%	-	-
Stegi Urban Area	21.2%	11%	5%	-	-	-
Nazarene School, Stegi	27.3%	6.8%	4.5%	-	-	-
Umbuluzi Girls School	6.2%	2.4%	-	-	0.48%	-
Mhlume	7%	4%	0.36%	0.36%	0.73%	1%
Pmnjwana	2.3%	3.4%	-	-	-	-
Esinceni	1.6%	1.6%	1.6%	-	-	-
Sipofaneni	1.4%	2.8%	-	-	-	-
Nomahasha	33.85%	1.55%	3.89%	-	-	-
Maloma	17.4%	13.0%	-	-	-	-
Hluti Nazarene Mission	26.6%	3.3%	10%	-	3.3%	-
Hluti Florence Mission	5.75%	2.9%	6.75%	-	0.96%	-
Gollel	9.1%	7.8%	17.0%	-	5.2%	-
Lubuli	14.75%	6.5%	13.0%	-	3.25%	-
St. Phillips	-	12.37%	3.1%	-	1.0%	-
Balagane	15.25%	3.4%	3.4%	-	3.4%	3.4%
Forbes Reef	11.0%	2.0%	-	1.0%	1.0%	-
Mbabane	30.8%	3.5%	1.5%	0.8%	2.0%	-
Ezulwini	27.0%	-	-	-	6.0%	-
Mhlotsheni	3.5%	6.5%	1.8%	1.2%	0.6%	-
Kubuta Itemba Mission	3.0%	20.0%	-	-	3.0%	-
Kubuta Bethany Mission	2.7%	10.8%	-	-	2.7%	-

BILHARZIA RESEARCH

I. At one of the Irrigation Schemes in the Eastern Lowveld many European children and adults contracted bilharzia and during investigation into the epidemiology of these infections, strong suspicions were aroused that the infections had actually taken place in the bath water in the homes of the people concerned. The water supply to the homes came from a snail infested canal. It was pumped from this to a small reservoir and then lead to the houses, some houses had water pumped direct from the canal to small storage tanks in the roof. As this system was considered to be a danger to the community the authorities were advised to instal a small treatment plant. Water was then treated with chlorine, flocculated and passed through a pressure filter. No further cases of bilharzia have occurred in the consumers since this system was installed..

II. Experiments with Ceracriae.

(a) During February 1959 experiments were conducted in order to ascertain how the usual methods of water purification, viz. sand filtration and chlorination affected cercariae.

(b) At the Bremersdorp Waterworks, the raw water, which has a Ph of 6.8 was brought up to a Ph of 8.0 for approximately 2½ minutes by the addition thereto of Sodium Aluminate.

/Thereafter .....

Thereafter, Aluminium Sulphate was added for the purpose of flocculation and also to reduce the Ph to 7.2. The water was then filtered through 3 feet of sand and finally chlorinated to the extent of 0.2 parts per million before distribution. This water reached the first draw-off points within a few minutes after chlorination.

(c) In the laboratory, water, with a Ph of 8, containing viable cercariae, was taken, sodium aluminate added, and allowed to stand for 4 minutes. This had the effect of increasing the Ph to 11. Aluminium Sulphate was then added and the Ph reduced to 9. All cercariae were still active in this water after 18 hours. One cercariae was still active after 32 hours.

(d) Tap water containing viable cercariae was passed through 3 feet of fine river sand in 2 burettes, the one being placed above the other. A fair number of the original cercariae passed through and when subjected to 0.2 p.p.m of chlorine, they were still active after 2 hours.

(e) Tap water containing viable cercariae was again taken and passed through a thick flockof alum and then through 3 feet of fine river sand in a one inch diameter galvanised iron pipe. The few cercariae that emerged were killed in 20 minutes by 0.3 p.p.m of chlorine, whilst 0.4 p.p.m killed them in 12 minutes.

(f) It might be desirable to perform one experiment in which all processes carried out at the waterworks are reproduced as closely as possible, although from the above and from reports by workers in this field, it would appear conclusive that ordinary sand filtration and chlorination are insufficient to destroy cercariae.

III. Observations in the field have shown that in several areas where conditions appear to be ideal for snail growth but where there are wattle trees in close promimity no snails are found.

Lengthy experiments to assess the value of wattle bark as molluscicide have shown that dilute solutions of an infusion of the bark will kill baby snails in a matter of hours. It also kills the miracidia in a short time but has no action on cercariae.

It would appear from this experiment that the wattle may be the cause of the absence of snails from some areas that would otherwise be ideal habitats for them.

Field experiments using wattle would take a long time to assess as it is only the baby snails that are killed, adults seem to withstand the substance and would, therefore, die a natural death. Theoretically gradual depopulation would occur as the adults died.

R. D. GAULDIE

MEDICAL OFFICER OF HEALTH

D. M. ECKARD

HEALTH INSPECTOR.

APPENDIX IV

ANNUAL REPORT OF MBULUZI LEPROSY HOSPITAL.

For the year ending 31st December 1959

The number of patients in the Leper Colony diminished from 40 at the close of 1958 to 30 at the close of 1959. 28 were discharged to their homes during the year as arrested cases. The admission of 17 new cases indicates that the infection is still present in the Territory and most cases can be traced to familial contacts. The gradual diminution of cases is, however, encouraging. The success of medicinal treatment together with the comparatively happy and hygienic conditions of life at the Colony render it easy to persuade patients to come into the colony voluntarily.

Two of the three re-admissions during the year were old 'burnt-out' and deformed cases who were re-admitted for humanitarian reasons. The other was a young girl who had not returned for her six-monthly check-up and had neglected to continue routine treatment for discharged cases. She had become pregnant and the manifestations of recurrence had appeared during pregnancy.

The main-stay of treatment continues to be Diaminodiphenylsulphone. It is possible that the number of Lepra reactions may have been aggravated by this drug, and experiments have been made in the use of another drug, Diphenylthiourea (Ciba 1906) which appears to be less toxic and less liable to give rise to Lepra reactions. Iron and Yeast have been given regularly along with these drugs. Isoniazid, which is being used in the treatment of tuberculosis, has also been given in some cases in the hope that it might be an adjunct to the other specific drugs and hasten what is still a rather slow process towards recovery.

I. STAFF.

Dr. David Hynd, C.B.E.	Medical Superintendent,
Miss E. Cole, S.R.N.,S.C.M.	Matron
Miss Betty Mamba	Nurse
Rev. Samuel Dlamini	Chaplain & Liaison Officer
Mrs. Prisca Manana	School Teacher
2 Labourers.	

All members of the staff are resident at the colony except the Medical Superintendent who makes a visit every two weeks for therapeutic and administrative purposes. The lack of telephonic communication with the colony gives rise to difficulties in cases of serious illness or in administrative problems amongst the patients. It is understood that Government is awaiting approval for the erection of a telephone line. The Colony is run as a Department of the Raleigh Fitkin Memorial Hospital, Bremersdorp, and thus receives the help of its administrative and clerical staff gratuitously.

II. FINANCIAL.

The following is a statement of the running costs of the Colony for the year ending 30th April, 1959 -

/Food .....

Food	£446. 2. 2.
General Supplies	200. 8. 9.
Salaries & Wages	808.12. -
Transport	82.19. 3
Travelling Expenses	50. 7. 3
Medical Supplies	98.10. 8
Repairs	58. 3.11.
Ambulance Maintenance	110. 5. 6
Miscellaneous	23.16.10.
	£1879. 6. 4.

The above expenditure is met by a Government grant of £1,574 and donations through the Church of the Nazarene and the Mission to Lepers. Regular visits from members of the Mbabane Branch of the Red Cross when comforts and other gifts are brought to the patients are much appreciated. The Red Cross and other individual donors gave liberally to make Christmas a time of joy and cheer for staff and patients. The presence of His Honour the Resident Commissioner and Mrs. Marwick at the Christmas party when gifts of food, clothing and toys were given to the patients gave much pleasure and encouragement to the patients in their isolation.

III. HEALTH OF PATIENTS.

The general health of the patients has been good, and apart from those suffering from occasional Lepra reactions, and those with major deformities, all of them engage in various forms of occupational therapy.

IV. STATE DURING THE PAST YEAR.

Number of patients	December 1958	40
	December 1959	30

V. ADDITIONS TO POPULATION

	Males	Females	Total.
Admissions	10	7	17
Re-admissions	1	3	4
	11	10	21

VI. LOSSES IN POPULATION

Deaths		1	1
Desertions		2	2
Discharges	13	15	28
	13	18	31

VII. ORIGIN OF PATIENTS ADMITTED.

Duration	Admissions	Percentage.
0 - 1 years	7	33.4
1 - 2 "	8	38.1
2 - 3 "	1	4.7
4 - 5 "	1	4.7
5 plus years	4	19.1
	21	100.0%

/CLASSIFICATION .....

IX CLASSIFICATION ON ADMISSION.

Type	Males	Females	Total	Percentage.
Lepromatous	3	2	5	23.8
Neural	9	7	16	76.2
	12	9	21	100.0%

X. AVERAGE AGE ON ADMISSION.

The average age on admission was 27.7.

XI. PROPORTION OF CHILDREN TO TOTAL ADMISSIONS.

There were 4 admissions of children under the age of 16 years out of a total of 21 admissions, i.e. 19.5%

XII. TREATMENT

The attendances at the Dispensary were	11,095
Admissions to wards	17
In-patient days	3,506

The following diseases were treated -

Blindness	1	Lepra reaction	7
Trophic Ulcer	4	Observation	1
Skin affection	3	Endocarditis	1

XIV. LABORATORY REPORT.

121 smears from patients were examined during the year for the presence of B. Leprae with the following results:

	Positive		Negative	
	Nasal	Skin	Nasal	Skin.
Lepromatous	-	18	-	32
Neural	-	3	-	68
		21		100

In conclusion I wish to express my appreciation to the staff for the efficient and devoted way in which they give themselves to the physical, mental and spiritual welfare of the patients, most of whom go back to their homes rehabilitated in every way to take their place in the community. I also wish to thank the officers of the various Government Departments, the Church of the Nazarene, the Red Cross Society, the Mission to Lepers and members of the public for the financial and moral support given to us for the care of our patients throughout the year.

DAVID HYND

MEDICAL SUPERINTENDENT.

PUBLIC HEALTH.

SANITATION.

It is pleasing to report that the Mbabane sewerage disposal scheme was started during the year, and it is hoped to put the scheme into operation during May 1960. Unfortunately the African Township of Msunduza, which is mostly within the Urban Area of Mbabane, was not included in the scheme. This township which has been allowed to develop in a most haphazard manner is now overflowing the urban boundary, and future control will present a difficult problem.

French drains at the Mbabane Hospital and at the Tavern Hotel have given rise to nuisance during the year. With the advent of the sewerage scheme the central area of Mbabane will be able to develop with the construction of new shops, flats, and other business premises.

Bremersdorp, however, is adversely affected in this respect, as lacking a sewerage disposal scheme, no major building projects can proceed. Portions ofthe Bremersdorp Urban Area have a clay sub-soil and in these areas french drains have not worked well. In particular the Central Butchery is experiencing great difficulty in the disposal of waste water.

The Local Authority at Goedgegun has encouraged property owners to convert their pail closets to septic tanks, and where this has been done results have been satisfactory. The remaining townships rely on septic tanks and pail closets with here and there an odd pit latrine.

REFUSE REMOVALS.

This is carried out in the townships by animal drawn transport assisted on occasions by the local township lorries, and disposal is mostly by uncontrolled tipping. In Mbabane, only the central or business area of the town has a removal service, residents in other sections having to bury their refuse. Lack of supervision of proper burial methods has led to numerous complaints of fly breeding. Provision has been made for the purchase of a refuse removal lorry so the service can be extended to the township.

BUILDINGS.

Seventy one plans for the erection of dwellings, shops, warehouses, halls, flats, alterations, etc. by private enterprise were submitted to the Health Office by Local Authorities for scrutiny and recommendations.

Among the major projects completed during the year mention must be made of the Roman Catholic Cathedral in Bremersdorp, two 3 storey buildings comprising shops and flats and shops and offices in Allister Miller Street, Mbabane, and a new hotel in Stegi. In Bremersdorp three blocks of flats have been occupied and two butcheries are contemplated.

New draft legislation has been prepared by the Township Executive Officer covering buildings, drainage, and regulations for Urban Areas.

WATER SUPPLIES/..

WATER SUPPLIES.

The Mbabane supply has continued to be satisfactory throughout the year. The supply has been augmented by a second pipeline from the catchment area to the purification works, and a micro-filter was recently installed.

The water position at Pigg's Peak, Hlatikulu and Goedgegun remains unchanged with the Goedgegun supply being chlorinated, but the other two not. No filtration is carried out at these centres.

Improvements to an amount of approximately £2,000 are to be effected at Stegi where sedimentation tanks will be built close to the present pumping plant. Due to incomplete floculation in the water before it reaches the slow sand filters, the filters have to be cleaned frequently. Further improvements include the raising of the reservoir wall five feet in order to impound more water, and the installation of additional pumping equipment to raise the water from the sedimantation tanks to the filters near the golf course.

GENERAL DEALERS.

Regular inspections have been carried out where food is prepared, handled or offered for sale. The following articles were surrendered by store keepers for destruction

1	picnic ham
6	tins green beans.
22	" canned fruit.
1	" " beetroot.
3	" " jam.
6	" sardines.
31	" fish.
1	" corned beef.
2	" Vienna sausages
1	" luncheon meat.
2	" bottles fruit base.
1 x 40 lbs	cheddar cheese.

In early February there was a food poisoning outbreak on a farm in the Mankaiana District which affected fourteen Africans, one of whom died. Investigation showed that the probable cause was poisoning with arsenite of soda which was kept in a room where mealie meal was stored.

MEAT SUPPLIES.

The inspection of meat at Government abattoirs at Mbabane, Bremersdorp, Stegi, Hlatikulu and Goedgegun has been carried out by trained Africans, and at the two larger centres Health Inspectors or members of the Veterinary Department have been available for the further inspection, and condemnation if necessary, of any carcases detained.

Abattoir returns for Bremersdorp and Mbabane are as follows:-

BREMERSDORP ABATTOIRS.

1959 Month	Number Examined			Number Passed			Number Rejected			Number Frozen			Number Cooked			Number Destroyed		
	Cattle	Pigs	Sheep	C	P	S	C	P	S	C	P	S	C	P	S	C	P	S
January	128	39	62	124	37	62	4	2	–	2	–	–	2	–	–	–	2	–
February	134	35	61	126	32	61	8	3	–	4	–	–	4	–	–	–	3	–
March	134	32	60	131	32	60	3	–	–	2	–	–	1	–	–	–	–	–
April	134	47	74	124	40	74	10	7	–	7	–	–	3	–	–	–	7	–
May	139	38	64	128	38	64	11	–	–	4	–	–	5	–	–	2	–	–
June	123	43	69	120	42	69	3	2	–	1	–	–	2	–	–	–	2	–
July	144	42	89	137	41	89	7	1	–	4	–	–	3	–	–	–	1	–
August	128	47	84	122	43	84	6	4	–	3	–	–	2	–	–	1	4	–
S eptember	152	45	73	145	41	73	7	4	–	4	–	–	2	–	–	1	4	–
October	152	47	86	145	45	86	7	2	–	4	–	–	3	–	–	–	2	–
November	129	35	79	122	31	79	7	4	–	3	–	–	2	–	–	2	4	–
December	123	58	98	116	57	98	7	1	–	6	–	–	1	–	–	–	1	–
TOTALS	1620	508	899	1540	479	1540	80	30	–	44	–	–	30	–	–	6	30	–
Incidence of C. Bovis = 4.9%; Incidence of C. Cellulose 5.9%																		
MBABANE ABATTOIR (11 months)																		
January																		
February	73	7	48	72	6	48	1	1	–	1	–	–	–	–	–	–	–	–
March	92	31	52	89	30	52	3	1	–	2	–	–	1	–	–	–	1	–
April	113	33	53	112	32	53	1	1	–	–	–	–	1	–	–	–	1	–
May	116	28	59	112	27	59	4	1	–	2	–	–	1	–	–	1	1	–
June	97	28	67	95	27	67	2	1	–	2	–	–	–	–	–	–	1	–
July	105	36	65	102	35	65	3	1	–	1	–	–	2	–	–	–	1	–
August	93	26	49	88	22	49	5	4	–	2	–	–	3	–	–	–	4	–
September	87	34	46	87	29	46	–	5	–	–	–	–	–	–	–	–	5	–
October	112	34	15	112	26	15	–	8	–	–	–	–	–	–	–	–	8	–
November	94	19	40	94	18	40	–	1	–	–	–	–	–	–	–	–	1	–
December	81	24	73	80	22	73	1	2	–	1	–	–	–	–	–	–	2	–
TOTALS	1063	300	567	1043	274	567	20	26	–	11	–	–	8	–	–	1	26	–

Incidence of C. Bovis = 1.9%; Incidence of C. Cellulosae 8.6%; C = cattle; p = pigs, s = sheep.

In addition the following organs were condemned.

	MBABANE.	BREMERSDORP.	TOTAL.
Bovine livers (fluke)	11	118	129
" " (abscess)	-	2	2
" " (tumors)	-	2	2
" lungs (Abscess)	-	3	3
" " (Hydatid cysts)	-	21	21
" heads (abscess)	-	1	1
" leg bruising	-	1	1
" (tuberculosis)	1	-	1
Sheep Livers (fluke)	14	143	157
" " (Stilesia)	13	141	154
" lungs (abscess)	3	-	3

The following schedule shows the various inspections carried out at the different centres -

Abattoirs	5	105		75	7	5	12		
Butcheries	4	56	4	34	9	8	10	10	22
Bakeries		13		5	2	1	10	4	
Building Sites		37		41	5		11		
Complaints		24		12	3		2	2	
Dairies		18		12			4		1
Eating Houses		6						2	
Foodstuffs	2	42	2	20			1		1
Fumigations		2		-			-		
General Dealers	12	34	4	6	2	8	8	6	3
Hotels	1	27	2	5	3	4	4	4	
Hairdressers		4					2		
House inspection				17		3	17		
Markets	3	29	1	7		2	2		
Night soil disposal		10	2	7		1	2		
Pit Latrines		4	2	3				2	
Pail Closets				7					
Public Conveniences	6	41	3	12					
Refuse (bins)		44		4					
Totals c/f	33	452	20	277	31	34	85	36	27

The following schedule shows the various inspections carried out at the different Centres. (continued)

Totals b/f	33	452	20	277	31	34	85	30	27
Refuse disposal	3	22		13	2		3	4	
Rodents		5		–					
Swimming baths		16		22		2			
Tea rooms		6		20			2	2	
	36	545	20	321	33	34	90	36	27
Miscellaneous inspections	23	172	23	178	19	14	54	31	44
TOTALS	59	717	43	499	52	48	144	67	71

J. F. BATESON

HEALTH INSPECTOR

APPENDIX VI

GOVERNMENT HOSPITALS AND CLINICS, 1959

HOSPITALS.		MBABANE	HLATI-KULU	MANK-IANA	PIGG'S PEAK	TOTAL.
Establishment						
Medical Officers		4	3	-	1	
Matron		1	1	-	-	
Nursing Sisters		6	3	1	-	
Pharmacist/Storekeeper		1	1	-	-	
Radiographer		1	-	-	-	
Housekeeper		1	-	-	-	
Medical Assistant		1	1	1	-	
Laboratory Assistant		1	1	-	-	
Dispensers		2	1	-	-	
Pupil Dispenser		-	1	-	-	
Nurses		30	23	5	4	
Outpatient Attendants		2	-	1	-	
Ambulance Drivers		2	1	-	1	
Ward Attendants and Orderlies		14	11	1	2	
BEDS:	European	9	8	-	-)	
	African	142	127	24	16)	326
ADMISSIONS:	European	356	71	-	-)	
	African	3388	2675	2014	1079)	9,583
DAILY AVERAGE NO. OF IN-PATIENTS:						
	European	4.8	1.3	-	-)	
	African	194.7	114.4	43.9	33.2)	392
DEATHS:	European	4	3	-	-)	
	African	131	75	20	26)	259
OPERATIONS:		1270	304	63	-	1,637
X-RAY EXAMINATIONS		2641	817	-	-	3,458
SCREENINGS		187	51	-	-	238
OUT-PATIENTS:						
1st Attendances	Europeans	4248	721	158	403)	
	Africans	18836	14008	9343	5919)	53.636
Subsequent Attend.	Europeans	4359	522	57	195)	
	Africans	18080	5200	2378	2145)	32,936
Total		45523	20451	11936	8662	86,572

/Clinics .....

CLINICS.

HLATIKULU DISTRICT.	First Attendances		Subsequent Attendances		Total Attendances	
	E	A	E	A	E	A
Goedgegun	676	7665	615	6648	1291	14,313
St. Phillips Mission ++	16	4358	2	1783	18	6,141
Mhlotsheni	46	4278	7	2882	53	7,160
Hluti	80	3309	65	1662	145	4,971
Sipofaneni	26	2665	32	2236	58	4,901
Lubuli +	21	2589	3	921	24	3,510
Vimy Ridge (Gollel)	-	670	-	-	-	670
PIGG'S PEAK DISTRICT.						
Horo	-	7586	-	4861	-	12,447
Lesters +		2351	-	720	-	3,071
MBABANE DISTRICT.						
Government Farm	6	4039	1	1646	7	5,685
STEGI DISTRICT						
Nomahasha +	-	1114	-	530	-	1,644
TOTALS	871	40624	725	23889	1596	64,513

+ = Clinics staffed and supplied by the Swazi National Treasury

++ = Roman Catholic Clinic, supplied and supervised from Hlatikulu Hospital.

APPENDIX VII

MISSION HOSPITALS AND CLINICS 1959

HOSPITALS:		RALEIGH FITKIN MEMORIAL HOSPITAL	GOOD SHEPHERD HOSPITAL	MAHAMBA METHODIST HOSPITAL	TOTALS.
BEDS:	European	8	2	2	12
	African	169	33	71	281
ADMISSIONS:	European	320	30	17)	6,562
	African	4284	921	990)	
DAILY AVERAGE NO. OF IN-PATIENTS.	European	4.9	0.52	0.3)	279
	African	186.0	31.3	55.5)	
DEATHS:	European	3	-	-)	167
	African	96	17	51)	
OPERATIONS:		986	(a)	206	1,192
X-RAY EXAMINATIONS		1057	(a)	632	1,689
SCREENINGS		16		5	21
OUT-PATIENTS.					
1st Attendances	Europeans	3952	595	205)	22,199
	Africans	9055	5150	3242)	
Subsequent Attendances	Europeans	889	35	249)	15,512
	Africans	9983	2510	1846)	
TOTALS		23879	8290	5542	37,711

CLINICS.

NAZARENE MISSION	First Attendances		Subsequent Attendances		Total Attendances	
	E	A	E	A	E	A
Endingeni	2	4328	-	2524	2	6852
Stegi	56	4706	58	2182	114	6888
Pigg's Peak	21	1752	11	664	32	2416
Mayiwane	-	889	-	3255	-	4144
Ebenezer	-	1524	1	351	1	1875
Mliba	-	587	-	1536	-	2123
Mafuteni	-	472	-	1011	-	1483
Bhekinkosi	-	398	-	703	-	1101
Balegane	-	619	-	857	-	1476
TOTALS	79	14275	70	13083	149	28358
METHODIST MISSION						
Gege	-	394	-	742	-	1136
Dwaleni	-	346	25	545	25	891
TOTALS	-	740	25	1287	25	2027
TOTAL MISSIONS	79	15015	95	14370	174	30385

(a) = no figures available

APPENDIX VIII

RETURN OF CASES TREATED : GOVERNMENT AND MISSION HOSPITALS, 1959.

Detailed List No.	Group Causes	Total Cases	Out-patients E	Out-patients A	In-patients E	In-patients A	Deaths E	Deaths A
001-008	Tuberculosis, Respiratory System	700	6	222	-	472	-	50
010	Tuberculosis of Meninges and C.N.S.	10		1		9		
011	Tuberculosis of Intesting & Peritoneum	60	1	2		57		8
012,013	Tuberculosis of Bones and Joints	13	1	12				
014-019	Tuberculosis - All other forms	232	17	114		101		1
020	Congenital Syphilis	146		112		34		3
021	Early Syphilis	558	11	517		30		
024	Tabes Dorsalis	1				1		
025	G.P.1	4		3		1		
022,023 026-029	All Other Syphilis	462	1	419		42		
030-035	Gonococcal Infection	1471	15	1388		68		
036-039	Other Venereal Diseases	97	3	88		6		
040,041	Enteric Fever	141	3		2	136		8
045,	Bacillary Dysentery	596	41	432	4	119		3
046	Amoebiasis	158	5	21	5	127		6
050	Scarlet Fever	1		1				
052	Erysipelas	3				3		
053	Septicaemia	1				1		1
055	Diphtheria	11				11		2
056	Whooping Cough	467	33	371		63		7
057	Meningococcal Infections	4			1	3		
060	Leprosy	18		9		9		1
061	Tetanus	17				17		6
062	Anthrax	3				3		
081-083	Late Effects of Poliomyelitis	7		5		2		
085	Measles	768	192	429	2	145		1
092	Infectious Hepatitis	66	30	8	3	25		
104	Tick-bite Fever	27	24	3				
116	Malaria	25	8	6	4	7		1
123-1	Bilharzia (Vesical)	734	22	642	1	69		
123-0	Bilharzia(Intestinal)	5		2		3		
126	Tape Worm	987	28	941		18		
130-0	Ascariasis	820	28	764		28		
124,128, 130-1	Other Helminthic Diseases	162	30	112		20		
049	Food Poisoning	29	7	9	3	10		
087	Chickenpox	268	36	212	1	19		
131	Dermatophytosis	350		349		1		
135	Scabies	131		125		6		
137,138	Other Infective and Parasitic Diseases	275	157	111		7		2
	Malignant Neoplasms of							
140-150	(a) Mouth, Pharynx, Œsophagus	13	4			9		2
151-154	(b) Stomach, Intestine, Rectum	18	2	1	2	13	1	5
161-163	(c) Larynx, Trachea, Lung	6				6		
170	(d) Breast	3	1			2		

/(e)......

Detailed List No.	Group Causes	Total Cases	Out-patients E	Out-patients A	In-patients E	In-patients A	Deaths E	Deaths A
	Maglignant Neoplasms of							
171 (e)	Cervix Uteri	22		2		20		2
172 (f)	Body of Uterus	14		2		12		1
177 (g)	Prostate	6	1	3		2		
191.9 (h)	Skin	3				3		
196-197 (i)	Bone and Connective Tissue	6		1		5		1
199 (j)	All Other Sites	27	2	1	1	23		9
204	Leukaemia	7	2	2		3		
210-239	Benign Neoplasms	295	48	144	16	87		
250,251	Non-Toxic Goitre	214	6	183		25		
252	Thyrotoxicosis	20	8	11	1			
260	Diabetes Mellitus	16	12	2	2			
281	Pellagra	601	2	521		78		3
282	Scurvy	53		52		1		
286.6	Kwashiorkor	421		196		225		21
286.5	Malnutrition, Unqualified	935	20	700	1	214		13
290	Hyperchromic Anaemias	10	3	5		2		
291	Hypochromic Anaemias	16	13	2		1		
292,293	Anaemia, Unspecified	331	14	297		20		1
241	Asthma	612	202	305	9	96		1
240,242, 245	Other Allergic Disorders	436	56	352	3	25		
300-309	Psychoses	42	15	9		19		
310-324, 326,	Psychoneuroses, Hysteria	477	189	242	10	36		
325	Mental Deficiency	42	2	35		5		
330-334	Vascular Lesions of C.N.S.	45	8	25		12		1
340	Meningitis (Non-Meningococcal)	4	1			3		
353	Epilepsy	121	12	65	1	43		2
370-379	Inflammatory Diseases of Eye	1986	115	1685	2	184		1
385	Cataract	71	1	57		13		
387	Glaucoma	4		2		2		
390	Otitis Externa	516	102	388		26		
391-393	Otitis Media and Mastoiditis	1256	253	859	4	140		
380-384	All Other Diseases of Eye	377	45	304	1	27		
341-344	Other Diseases of C.N.S. & Sense Organs	755	82	607		66		2
400-402	Rheumatic Fever	73	11	39	3	20		
410-416	Chronic Rheumatic Heart Disease	162	13	137	1	11		3
420-422	Arterio-Sclerotic and Degenerative Heart Disease	164	37	54	9	64	2	9
430-434	Other Diseases of Heart	512	39	352	18	103	2	16
440-443	Hypertension with Heart Disease	120	14	84	1	21		2
444-447	Hypertension	130	23	73	7	27		
450-456	Diseases of Arteries	43	5	32	1	5		1
460-468	Other Diseases of Circulatory System	327	118	144	12	53	1	7
470-475	Acute Upper Respiratory Tract Infections, including Actue Tonsillitis	4206	878	2927	78	323		
480-483	Influenza	3579	589	2548	26	416		

/Lobar .....

Detailed List No.	Group Causes	Total Cases	Out-patients E	Out-patients A	In-patients E	In-patients A	Deaths E	Deaths A
490	Lobar Pneumonia	385	14	76	4	291		14
491	Broncho Pneumonia	1161	56	576	11	518		29
492,493	Atypical Pneumonia	85	4	30	6	45		4
500	Acute Bronchitis	4772	263	4107	5	397		1
501,502	Bronchitis, Chronic & Unspecified	865	161	612	2	90		1
512. .	Chronic Pharyngitis & Chronic Tonsillitis	356	92	198	2	64		
518,521	Empyema & Lung Abscess	13	1		1	11		1
519	Pleurisy	205	35	113	3	54		1
523	Pneumoconiosis	36		17		19		1
520-522	Other Respiratory Diseases	476	7	412		57		4
530	Dental Caries	4027	301	3651	11	64		
531-535	All other diseases of Teeth & Supporting Structures	662	90	523	2	47		
540	Gastric Ulcer	38	13	13	2	10		
541	Duodenal Ulcer	26	22		4			
543	Gastritis & Duodenitis	1482	215	1116	7	144		
550-553	Appendicitis	294	102	64	44	84		1
570	Intestinal Obstruction	30	3	2	2	23		4
560	Hernia	125	32	52	9	32		
571-0	Gastro-Enteritis (4 weeks to 2 years)	3597	264	2712	11	610		48
571.1	Gastro-Enteritis (over 2 years)	2302	326	1669	24	283		13
572	Chronic Enteritis & Colitis	278	54	179	1	44		1
581	Cirrhosis of Liver	82	5	31	3	43		5
584,585	Cholelithiasis and Cholecystitis	136	70	25	18	23	1	1
536-539, 544,573-580,582, 583,586, 587	Other Diseases of Digestive System	2808	193	2392	4	229		8
590	Acute Nephritis	42	3	22		17		1
591-594	Chronic & Unspecified Nephritis	35	4	12		19		
600	Infections of Kidney	219	96	84	9	30		
602,604	Calculi of Urinary System	19	8	6	4	1		
610	Hyperplasia of Prostate	17	11	3	1	2		
620,621	Diseases of Breast	119	5	77	3	34		
613	Hydrocele	79	1	40		38		
634	Disorders of Menstruation	2016	265	1591	15	145		
601,603, 605-609, 611,612, 614-617, 622-633, 635-637,	All Other Diseases of Genito-Urinary System	4498	334	3524	57	583		1
660	Normal Deliveries	1810			98	1712		
671,673-678	Deliveries with Complications	173			15	158		21
640,641, 681,682 684	Sepsis of Pregnancy, Childbirth and Puerperium	87		50		37		1
642	Toxaemia of Pregnancy	65	7	16		42		

/Haemorrhage .....

Detailed List No.	Group Causes	Total Cases	Out-patients E	Out-patients A	In-patients E	In-patients A	Deaths E	Deaths A
643,644, 670,672	Haemorrhage of Pregnancy & Childbirth	26	2	4		20		
650	Abortion	354	46	95	15	198		
651	Abortion with Sepsis	33	1	18		14		
690-698	Infections of Skin & Subcutaneous Tissues	2429	495	1648	6	280		
720-725	Arthritis & Spondylitis	693	35	540	3	115		
726,727	Muscular Rheumatism & Rheumatism Unqualified	1965	268	1570	3	124		
730	Osteomyelitis & Peri-Ostitis	111	5	59	1	46		1
737,745, 749	Ankylosis & Acquired Musculo-Skeletal Deformity	66	17	35		14		
700-714	All Other Diseases of the Skin	1588	228	1224	5	131		
731-736, 738-744	All Other Diseases of Musculo-Skeletal System	300	111	143	5	41		
750-759	Congenital Malformations	57	1	34		22		5
760-762	Birth Injuries	27		14		13		2
765	Ophthalmia Neonatorum	28		23		5		
770	Haemolytic Disease (Neo-Natal)	5			1	4	1	1
773-776	Ill-defined Diseases - Early Infancy	145	10	92		43		11
794	Senility	36	1	23		12		4
788.8	P.U.O.	213	98	64	2	49		
780-787, 788.1-788.7, 788.9, 789-792, 795	All other ill-defined Causes of Morbidity	973	201	627	36	109		4
793	Observation without need for further care	566	168	346	6	46		

"E" CODE ALTERNATIVE CLASSIFICATION OF ACCIDENTS, POISONINGS AND VIOLENCE (EXTERNAL CAUSE).

Detailed List No.	Group Causes	Total Cases	Out-patients E	Out-patients A	In-patients E	In-patients A	Deaths E	Deaths A
E810-E835	Motor Vehicle accidents	372	62	134	32	144	2	8
E800-802 E840-866	Other Transport accidents	197	12	105	3	77		1
E870-E895	Accidental Poisoning	66	3	27	4	32		
E900-E904	Accidental Falls	1472	123	988	9	352		
E612	Accidents caused by Machinery	149	17	101		31		
E916	Accidents caused by Fire	339	10	223	3	103		7
E917, E918	Accidents caused by Hot Substances and Corrosives	271	23	187	1	60		
E919	Accidents caused by Firearms	17	6	5		6		
E910, E913-E915 E920-E928 E930-E965	All other accidental causes	2773	163	2039	18	653		3
E970-E979	Suicide and Self-inflicted injury	3	2		1			

/Assault .....

Detailed List No.	Group Causes	Total Cases	Out-patients		In-patients		Deaths	
			E	A	E	A	E	A
E980- E985	Assault, Homicide	582	3	247	2	330		2

"N" CODE ALTERNATIVE CLASSIFICATION OF ACCIDENTS, POISONINGS, AND VIOLENCE (NATURE OF INJURY)

N800- N804	Fracture of Skull	112	9	24	2	77	1	3
N805- N809	Fracture of Spine and Trunk	75	16	3	2	54	1	2
N810- N829	Fracture of Limbs	734	77	247	17	393		2
N830- N839	Dislocation	95	10	53	1	31		
N840- N848	Sprains & Strains	989	189	723	6	71		
N850- N856	Head Injury (excluding Fracture)	470	21	310	6	133		3
N860- N869	Internal Injury, chest, abdomen and pelvis	45	4	1	3	37		3
N870- N908	Laceration and Open Wounds	1959	168	1304	21	466		1
N910- N929	Superficial Injury-Contusion	781	121	661	5	108		
N930- N936	Foreign Body entering through orifice	199	33	99	2	65		1
N940- N949	Burns	591	30	411	4	147		8
N960- N979	Effects of Poisons	99	6	26	6	61		
N950- N959, N980- N999	All Other Effects of External Causes	92	4	58	1	29		
Y00	Medical Examinations, Boards, & Tax Exemption Examinations	3920	336	3574		10		
Y02	Prophylactic Injections							
	(a) Smallpox Vaccination	163	160	3				
	(b) T.A.B.	310	39	271				
	(e) Diphtheria, Whooping Cough and Tetanus	2628	249	2379				
	(f) Tetanus	135	35	100				
	(g) Poliomyelitis	142	133	4				
	(h) Yellow Fever	23	23					
Y06	Antenatal Examinations	5216	276	4940				
Y08	Attendants admitted as In-patients with sick children	1244			15	1229		
	TOTAL "NEW" PATIENTS	91,980.						

/Subsequent .....

SUBSEQUENT ATTENDANCES.	TOTAL	E	A
Subsequent Ante-Natal Attendances	3,968	761	3,207
Subsequent Prophylactic Injections	2,767	491	2,276
Other Subsequent Attendances	41,713	5250	36,463
Totals	48,448	6502	41,946.

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